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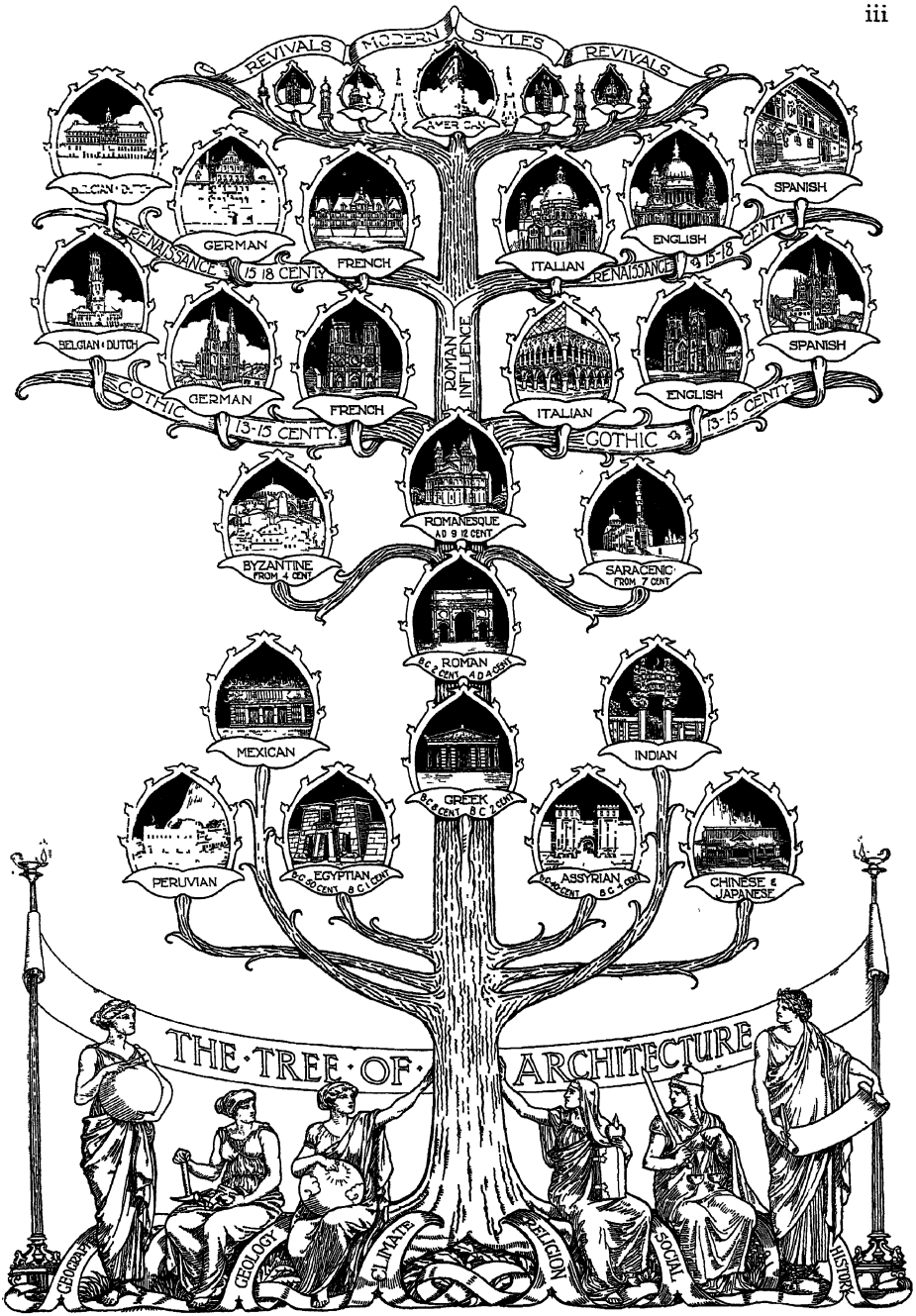
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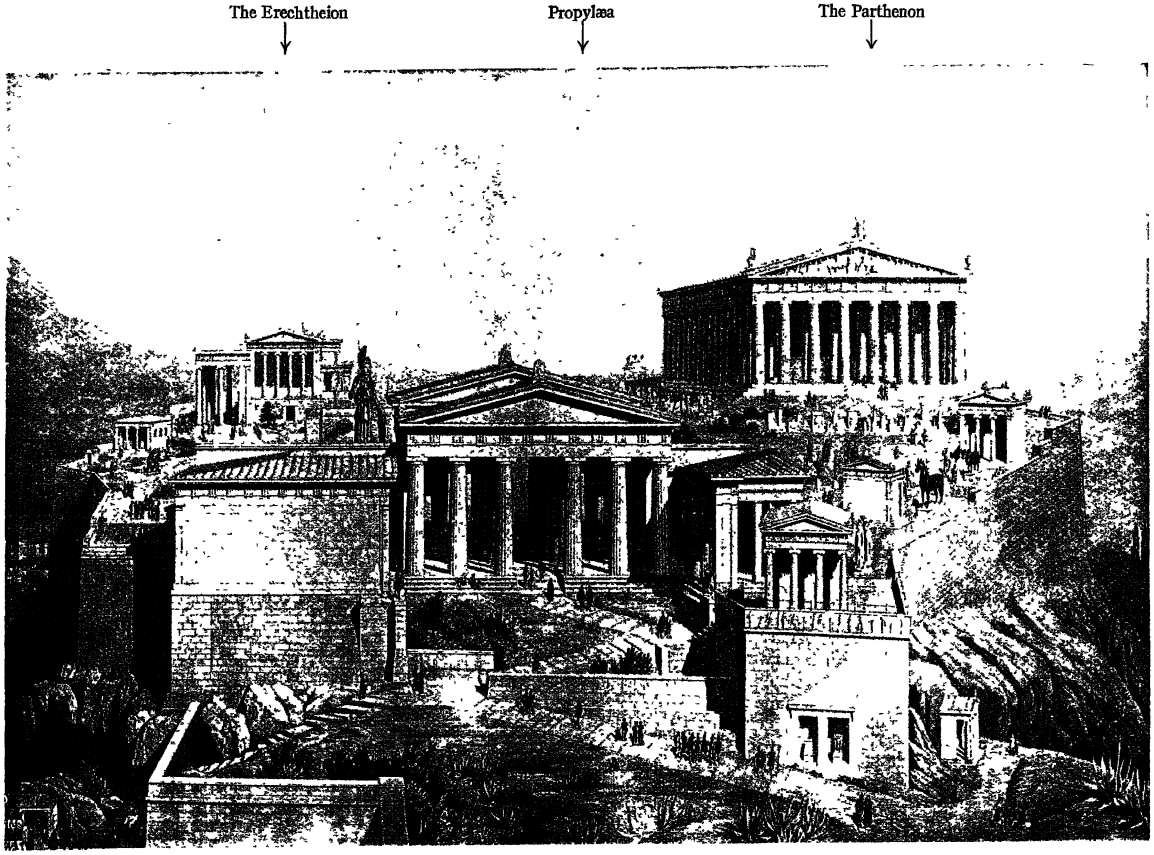
A HISTORY OF ARCHITECTURE ON THE COMPARATIVE METHOD

"Architecture is the printing press of all ages, and gives a history of the state of society in which it was erected."—MORGAN.



BANISTER FLETCHER, INV.

This Tree of Architecture shows the main growth or evolution of the various styles, but must be taken as suggestive only, for minor influences cannot be



RESTORATION OF THE ACROPOLIS, ATHENS

"Athens, the eye of Greece, mother of arts and eloquence."—*Milton*

A HISTORY OF ARCHITECTURE

ON THE COMPARATIVE METHOD

FOR STUDENTS, CRAFTSMEN, & AMATEURS

BY

Sir BANISTER FLETCHER

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PREFACE

THIS " History of Architecture on the Comparative Method " aims at displaying clearly the characteristic features of the architecture of each country by comparing one style with another and by giving prominence to the special influences—geographical, geological, climatic, religious, social, and historical—which have contributed to the formation of each style, influences which hitherto have not been emphasised sufficiently and systematically in presenting the story of architectural development.

The *analytical* and *comparative* method here adopted brings out the results of these influences, elicits the special qualities of each style, and contrasts them, so that differences may be easily grasped and individual styles better understood. Thus the character of Gothic architecture is emphasised by comparison with the Classic and Renaissance styles, while differences in national or local phases can be the more easily appreciated.

Each style throughout is considered under five sections, as follows :—

SECTION 1. INFLUENCES.
- i. Geographical.
- ii. Geological.
- iii. Climatic.
- iv. Religious.
- v. Social.
- vi. Historical.

SECTION 2. ARCHITECTURAL CHARACTER.

SECTION 3. EXAMPLES.

SECTION 4. COMPARATIVE ANALYSIS.
- *A. Plans,* or general arrangement of buildings.
- *B. Walls,* their construction and treatment.
- *C. Openings,* their character and shape.
- *D. Roofs,* their treatment and development.
- *E. Columns,* their position, structure, and decoration.
- *F. Mouldings,* their form and decoration.
- *G. Ornament,* as applied in general to any building.

SECTION 5. REFERENCE BOOKS.

SECTION 1 is divided into the six leading influences that help to shape architecture ; the first three are physical conditions, the next two the civilising forces, and the last the historical background.

SECTION 2 deals with the character of the architecture, its special quality and general appearance, and with various theories of origin and evolution.

SECTION 3 contains examples of the chief buildings which are the result of the various influences, the text being confined to brief but vivid descriptive notes supplemented by numerous illustrations, which are a special feature of the book.

SECTION 4 is the comparative analysis of the essential features of each style which result from the methods of solving certain structural problems ; thus in comparing the plans, walls, openings, roofs, columns, mouldings, and ornament of buildings we are enabled to visualise the agencies at work which produced changes in style.

SECTION 5 gives the principal volumes to which readers may refer who wish to pursue the study of any style in further detail. I am indebted to my publishers for careful revision of the Bibliography so as to include the chief standard works on architecture.

The whole of the letterpress of this, the eighth edition, after being critically examined and corrected in accordance with the latest investigations and modern views, has been reset in a new and clearer type. Important restorations and further illustrations have been incorporated, and the plates have been printed on finer paper to ensure the utmost clearness in their presentment. It is hoped that in its latest form the work will be found still more acceptable to general readers and to the students of the Universities, Public Schools, and Art and Technical Institutions of Great Britain, the British Dominions beyond the seas, and of America and Japan, where it is in use as a text-book.

It is a tribute to the usefulness of the work, which had long ago been published in the Russian language, that it has recently been translated into Spanish for use by Spanish-speaking students in Spain and South America.

My descriptions and criticisms of the buildings are mainly from personal observation of the world's greatest monuments, from ancient Troy to modern Chicago. In Egypt I have studied the Pyramids, Temples, and Tombs from Cairo to Khartoum, and I have lately revisited that country as far as Wady Halfa and surveyed some of the latest astonishing excavations, including, amongst others, the famous tomb of Tut-ankh-Amen, with its unrivalled treasures, and the new excavations at Karnak of a peculiar temple of the heretic Pharaoh. I have made repeated pilgrimages to Greece, the Greek islands, and the colonies of Asia Minor, besides exploring the palace of King Minos in Crete. In traversing Italy over and over again, I have lingered among the buildings in the hill-top cities and the towns of the plains, and on my many visits to Rome I have been materially assisted in my investigations by Lanciani and Boni. I have also visited the palace ruins at Spalato, on the Adriatic, which reveal the majestic might of Roman rule; and in the romantic island of Sicily I have noted how faithfully the varied buildings reflect the many dynastic changes. In North Africa I have studied the ruins of Roman outpost cities, such as Timgad and Tebessa, as well as of Old Carthage, with its amazing water reservoirs, and have visited Kairouan, with its Mahometan pilgrimage-mosque, while I have travelled through Morocco from the triple city of Fez, in the north, through Rabat and Meknes, to the palm-circled Marakesh, which borders on the Atlas Mountains, in the south. I have been twice to Constantinople and examined S. Sophia and the numerous Byzantine churches now converted into mosques. In Palestine I have gone down from Jerusalem to Jericho, through Samaria and Nazareth to Damascus, and on to the great Roman temples at Baalbek, in Syria. I have made several tours in Spain from Burgos, in the north, to Cordova, in the south, in order to study its distinctive architecture, which bears everywhere the indelible impress of Moorish craftsmanship. I have had many delightful trips in the fair land of France, with her magnificent heritage of Gothic cathedrals and Renaissance châteaux; in Belgium, with her cathedrals, town halls, and guildhouses; and in the canalised cities of Holland, with their stately burgher mansions. In studying the architecture of England I have sketched throughout the country all types of buildings—cathedrals, castles, churches, country mansions, manor houses—with which our land is so richly endowed. In America I have made

the acquaintance of the latest type of public buildings, of the steel-framed office block known as the " skyscraper," and of the clever domestic architecture, and in all these three types the American architect has solved successfully the problem of adapting good design to modern requirements.

Architecture constitutes a veritable chronicle in stone, yet hitherto it has not been assigned its proper place in education, doubtless due to the erroneous idea that the public could not grasp the constructive principles which govern architectural forms. The institution of a Diploma in the History of Art by the University of London is an important step in assigning to architecture its rightful place in the study of the humanities. Architecture is essentially a human art as well as an affair of material, and is governed and limited by many practical requirements which do not apply to the work of painters, sculptors, and musicians. It supplies a key to the habits, thoughts, and aspirations of the people, and without a knowledge of this art the history of any period lacks that human interest with which it should be invested; indeed, many people wander among Greek temples, Roman amphitheatres, and Gothic cathedrals without the slightest understanding of how they came to be erected.

The study of architecture opens up the enjoyment of contemplating buildings with an appreciation of their purpose, meaning, and charm, and every ruin conjures up the conditions of past ages. It is the one art with which we are all brought into daily contact, for it shelters us from the elements, gives us " Home," and enshrines the sacred symbols of all religions. Finally, architecture is the mother of the arts of sculpture, painting, and the allied decorative crafts. Many of the world's great rulers have been its patrons, and some, like Rameses the Great, have used architecture as the symbol of their personal power. To-day it is the turn of the people as a whole to become the patron of this great art.

The facilities offered by travel, museums, photography, lantern lectures, and even cinemas have been the means of arousing interest in the buildings of the past, and have enabled the public to recognise the immense importance of architecture in national and civic life. The best way to learn about architecture is to study actual buildings, while the museums in London and throughout Great Britain, the various countries of Europe and the United States of America provide excellent opportunities for examining details of style.

It is hoped that this work, of which the short title is " Comparative Architecture," will continue to appeal not only to architectural students and craftsmen, but also to that wider public which influences and largely controls the architecture of to-day, so that it will demand fine buildings expressive of our own times, worthy to rank with the great monuments of the past, which can be handed down as a heritage to future generations.

BANISTER FLETCHER.

1, KING'S BENCH WALK,
LONDON, E.C. 4,
New Year's Day, 1928.

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" The spirit of antiquity,—enshrined
In sumptuous buildings, vocal in sweet song,
In picture speaking with heroic tongue,
And with devout solemnities entwined—
Strikes to the seat of grace within the mind :
Hence forms that glide with swan-like ease along,
Hence motions, even amid the vulgar throng,
To an harmonious decency confined,
As if the streets were consecrated ground,
The city one vast temple,—dedicate
To mutual respect in thought and deed."

WORDSWORTH.

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712*	York Water-Gate, London. The Covered Bridge, Wilton. S. Paul, Covent Garden, London.	Vitruvius Britannicus, Belcher and Macartney, Pugin and Britton.
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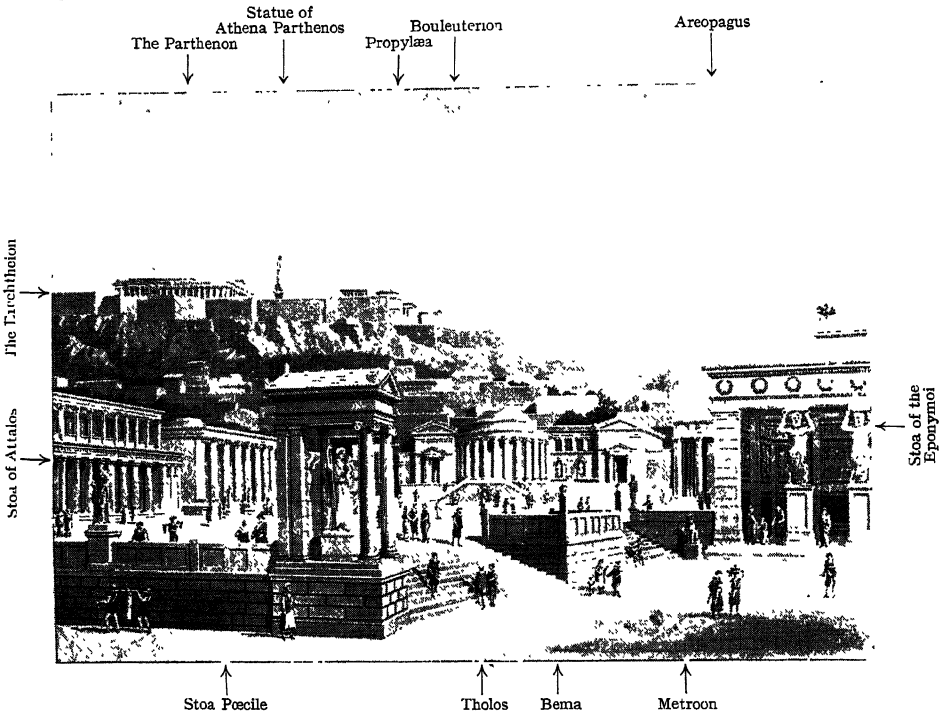
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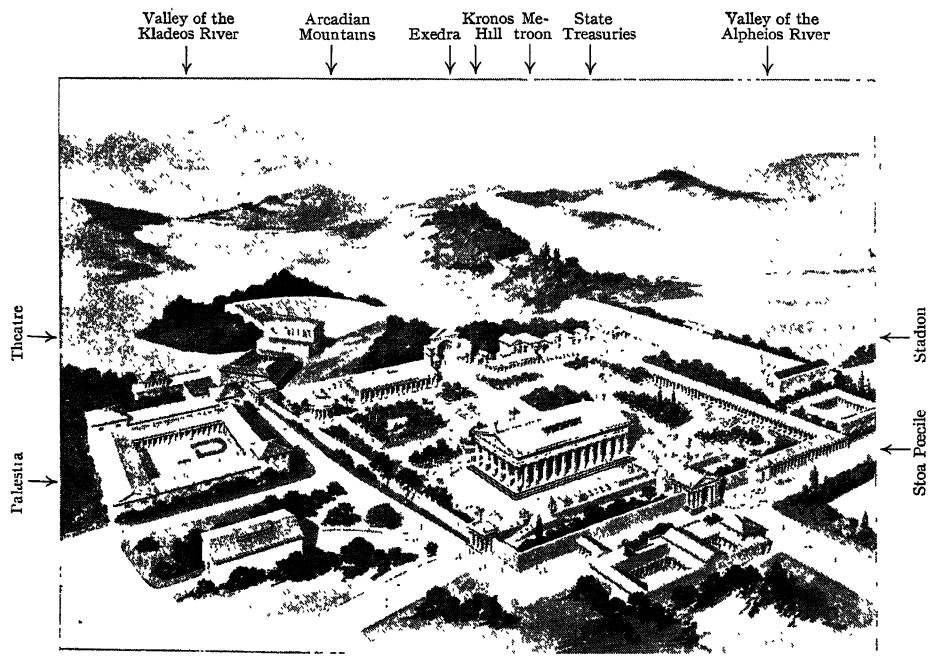
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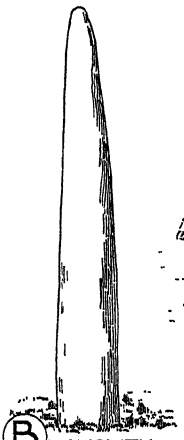
PREHISTORIC ARCHITECTURE

ARCHITECTURE, with all its varying phases and complex developments, must have had a simple origin in the primitive efforts of mankind to provide protection against inclement weather, wild beasts, and human enemies (p. 2). Hunters and fishermen in primeval times naturally sought shelter in rock caves, and these were manifestly the earliest form of human dwellings; tillers of the soil took cover under arbours of trees, and from them fashioned huts of wattle and daub; while shepherds, who followed their flocks, would lie down under coverings of skins which only had to be raised on posts to form tents. Here, then, in caves, huts, and tents we find the three primitive types of human dwellings, the three germs of later architectural developments. Nature's caves (p. 2 H), with their rough openings and walls and roofs of rock, inevitably suggested the raising of stone walls to carry slabs of rock for roofs, and old models of Egyptian houses show how rock caves influenced the plan, design, and material for primitive structures (p. 37 A). Natural arbours, again, would suggest huts with tree trunks for walls and closely laid branches, covered with turf, for roofs (p. 2 A, C). Huts of this character are still in use amongst primitive peoples, and the writer has seen them, as well as huts of two storeys with external stairs, in the village of old Jericho. Tents (p. 2 J) of sheepskins speak for themselves and are still as much in use among Bedouin Arabs and other nomadic tribes as they can have been in prehistoric times; and our thoughts turn naturally to the Tabernacle for the Ark of the Covenant, with its sheepskins and many woven hangings of silk and linen, which was carried by the Israelites through the desert, and was the apotheosis of the tent of shepherds in the dawn of man's life on the earth. Such, then, were the first rough structures evolved from the three natural prototypes, when man began to build dwellings for himself and temples for his gods.

Among prehistoric remains of archæological interest, but of little architectural value, are monoliths, dolmens, tumuli, and lake dwellings. Monoliths are single upright stones, known in Western France as "menhirs," such as those at Locmariaker (p. 2 B) and Carnac in Brittany, the latter of which is 63 ft. high, 14 ft. in diameter, and weighs 260 tons. Dolmens (Bret. *dol* = table + *maen* = stone) and Cromlechs (Gael. *crom* = bent



A THE HUT



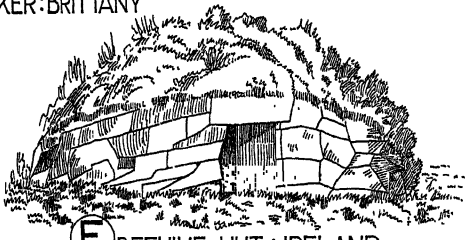
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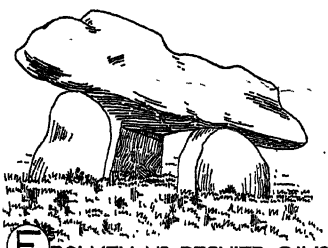
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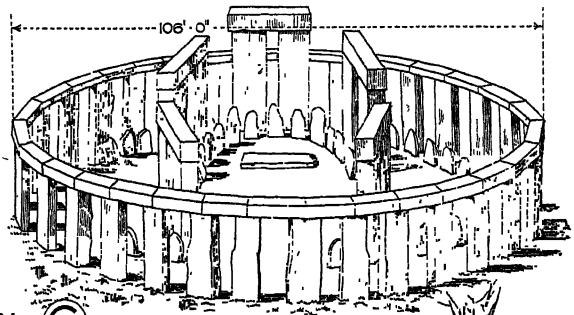
D BEEHIVE HUTS: LEWIS: SCOTLAND



E BEEHIVE HUT,: IRELAND



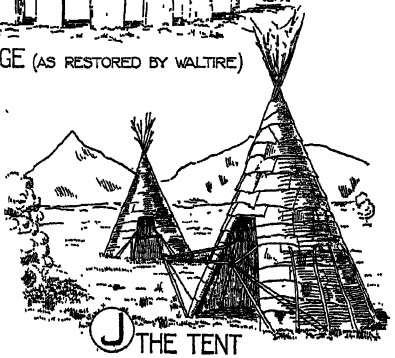
F DOLMEN: Nr. REGNIER: SAVOY



G STONEHENGE (AS RESTORED BY WALTIRE)



H THE CAVE



J THE TENT

+ *leac* = flat stone) are often used as interchangeable terms (p. 2 F). Dolmen is the name sometimes applied to two or more upright stones supporting a horizontal slab, as the Constantine dolmen, Cornwall, and the Pierre Couverte, Saumur, France; while the term Cromlech may be used for three or more upright stones, capped by an unhewn flat stone, as at Lanyon, Cornwall, Kit's Coty House, Maidstone, and other places in England, Wales, Ireland, Northern France, the Channel Islands, Savoy (p. 2 F), and India. These dolmens or cromlechs often stand within sacred circles of massive monoliths, supporting horizontal slabs, as at Avebury and Stonehenge, Wiltshire (p. 2 G). Stonehenge on Salisbury Plain, with its larger and smaller circles and horse-shoes of mighty monoliths in local "Sarsen" stone and of smaller "foreign" stones, may have been built by one megalithic race at one period or by two races at successive periods. As to its origin and date speculation seems endless; the approximate date assigned to it by Sir Norman Lockyer is B.C. 1680, but whether it is pre-Celtic or Celtic, pre-Druidical or Druidical, or partly both in origin, its ruling purpose must surely have been religious. It would seem to have been erected with no mean skill by primitive people for the worship of the sun; but great remains the mystery of Stonehenge with its trilithons, "altar," and "Friar's Heel" stone.

Tumuli or burial mounds were probably prototypes of the Pyramids in Egypt (p. 17 A) and of the beehive huts in Wales, Cornwall, Scotland (p. 2 D), and Ireland (p. 2 E). That at New Grange, Ireland, somewhat resembles the so-called Treasury of Atreus, Mycenæ (p. 70). Lake dwellings, such as those discovered in Switzerland, Italy, and Ireland, consisted of wooden huts built on piles in the water for protection against attack. There are some models of lake dwellings in the Zurich Museum.

The earliest stages of architectural evolution can only dimly be traced; for prehistoric remains show little constructive development or sequence, whilst the oldest existing historic monuments, as in Egypt, were the product of an already advanced civilisation. Thus there is a mysterious hiatus between prehistoric and historic monuments, although various forms and features of the latter inevitably suggest the possible nature of their lost prototypes. We dismiss, then, the fragmentary evidences of the rude building attempts in an unknown past and turn our attention to the centuries which are illumined by the light both of written history and of architectural monuments. During this long period architectural styles, by the test of evolution, fall naturally into two groups, viz. the Historical Styles (Part I of this book), which, beginning in Egypt and Assyria, reached their highest development in Europe, and the Non-Historical Styles (Part II, p. 784) of Indian, Chinese, Japanese, Ancient American, and Saracenic architecture, which were independent of and exercised little influence on the main stream of architectural development.

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PART I

THE HISTORICAL STYLES

INTRODUCTION

" Deal worthily with the History of Architecture and it is worthy to take its place with the History of Law and of Language."—FREEMAN.

THE History of Architecture is a record of continuous evolution, beginning with the simple and constantly repeated forms of Egypt, followed by the more highly developed temple-building of Greece; passing through the complex types of Imperial Rome, with her multitudinous public needs, and also through the ages of Christendom, when Mediævalists reared cathedrals and castles, until the men of the Renaissance reverted to the Classic types for the varied buildings of this great period in human development. The Tree of Architecture (p. iii) represents the evolution or growth due to the six influences—geographical, geological, climatic, religious, social, and historical—from the earliest times to the present day. Architecture, striding down the ages, was evolved, moulded, and adapted to meet the changing needs of nations in their religious, political, and domestic development. A glance along the perspective of past ages reveals architecture as a lithic history of social conditions, progress, and religion, and of events which are landmarks in the history of mankind; for as architecture is in all periods intimately connected with national life, the genius of a nation is unmistakably stamped on its architectural monuments, whether they are Egyptian, Greek, Roman, Mediæval, or Renaissance. Throughout the history of the human race, architecture, the mother of all arts, has supplied shrines for religion, homes for the living, and monuments for the dead. It is well described in Longfellow's verses:

" . . . Ah, to build, to build!
That is the noblest art of all the arts.
Painting and Sculpture are but images,
Are merely shadows cast by outward things
On stone or canvas, having in themselves
No separate existence. Architecture,
Existing in itself, and not in seeming
A something it is not, surpasses them
As substance shadow."

The architecture of Egypt is characterised by massive walls and sturdy, close-spaced columns carrying stone lintels which, in their turn, support the flat roof. Farther back we have not yet penetrated, and the Sphinx at Gizeh stands as a sentinel between us and those hidden stages of evolution which preceded the dawn of the historical styles. The Pyramids, which are amongst the oldest monuments, were religious in

origin and were the outcome of that insistent belief in a future life which was the governing idea of the religion of the Egyptians, who also believed that the preservation of the body was essential to secure the immortality of the soul. The Pharaohs therefore reared, as royal fortresses for their mummified bodies, those stupendous mounds of masonry which, even in these days of engineering skill, remain a wonder to the world. Herodotus records that the dwelling-house was regarded as a temporary lodging, and the tomb as the permanent abode. Pyramids and mastabas reveal the Egyptian belief in a future state; while temples, with their courts guarded by enclosing walls, are the outward and material expression of the domination of a powerful priesthood with its traditional and mysterious religious rites. Temples, approached along imposing avenues of sphinxes, alike in their mysterious plans, forbidding aspect, and mystic hieroglyphics, tell of the exclusiveness of the Egyptian religion; for they were not places of worship for the people, but rather sanctuaries for kings and priests. These colossal monuments reveal not only the religious faith, but also the social and industrial conditions of the land of the Pharaohs in those far-off days; for such massive buildings would have been impossible without a despotic government and the forced labour of a vast population of slaves and captives.

The architecture of Western Asia equally reflects national characteristics and indicates that the Assyrians and Persians were warriors and huntsmen, more concerned with material than with spiritual matters; thus they erected lordly palaces decorated with pictures of hunting and fighting, in preference to stupendous temples and tombs for guarding spiritual mysteries. Here, again, the colossal nature of building undertakings points to the social conditions that prevailed; for the thousands of prisoners taken in battle raised those enormous platforms on which the palaces of Nineveh, Babylon, and Persepolis were placed, together with the temple observatories which rose in diminishing stages to the summit from which astrologer-priests consulted the starry vault of heaven. The development of brick construction in Babylonia, due to the absence of stone, had resulted in the evolution of the arch and vault in place of the simpler trabeated style, and the combined influence of Egypt and Assyria on the architecture of Greece is easily traceable.

The architecture of Greece reflects each stage of Greek history with remarkable accuracy. Buildings of the Minoan and Mycenæan periods indicate the sturdy and primitive character of the early inhabitants. The Hellenic period, however, ushered in the most refined architecture and sculpture the world has ever seen, and this was concurrent with similar developments in literature and political institutions. Greece has, indeed, been the source of the highest artistic inspiration, and her architecture has influenced all styles down to our own day. The religion of the Greeks naturally engendered a desire to erect stately temples, and the national exultation at the final defeat of the Persians at Marathon and Salamis found expression in the building of so many fine temples in the fifty years following the overthrow of their enemies. The world-famous buildings on the Acropolis were completed during the rule of Pericles (B.C. 444–429), a period which marked the climax of Athenian prosperity, art, and culture. Whereas Egyptian temples were royal monuments with high forbidding walls to hide the mysterious halls from the public gaze, Greek temples, on the other hand, were public monuments with only a small naos for

the god, surrounded by open colonnades set out with all the beauty of column, entablature, and sculptured pediment in full view of the common people. Egyptian temples were a royal prerogative, Greek temples were the peoples' patrimony. Greek national games and festivals encouraged literature, music, and the drama, and these were responsible for the erection of stadia, palæstra, and theatres. The record in architecture of historical events can also be traced beyond the confines of Greece and her colonies even to Northern India, where the influence of Hellenic art is manifest in the architecture, which in its turn influenced Saracenic art. The Greek type of architecture is generally considered to have been an evolution from the wooden hut of upright posts supporting beams and sloping rafters. The theory is that this primitive timber architecture was reproduced in stone, and remained simple in character until the qualities inherent in stone resulted in further developments. Some authorities are, however, of opinion that Greek architecture is developed entirely from an early stone type; while others hold that it may have been evolved from a combined use of stone columns and timber beams. The subtle artistic sense of the Greeks led them to make full use of the clear, shining atmosphere and fine-grained marble of their native country to produce delicacy of outline, while their technical skill is seen in the perfect proportions and refined treatment which are the distinguishing characteristics of that marvellous architecture which has never since been equalled. The Greek love of beauty and variety gradually elaborated different types of column and entablature—Doric, Ionic, and Corinthian (p. 72)—known as the "Orders of Architecture." When in B.C. 146 Greece became a Roman province, her architecture, as a national style, died with her independence; although, like her civilisation, it continued to influence Roman and all later art.

The architecture of Rome was largely influenced by indigenous Etruscan art, so that a complex type resulted from blending the Greek column with the Etruscan arch. Though the Romans initiated the use of column and entablature as decorative facings to piers with semicircular arches, they still used columns constructively, as in the magnificent colonnades of forums, palaces, and temples. Social and political development among the Romans is displayed in the variety and monumental nature of their buildings, for, in addition to stately temples adorned with fine sculpture, there were public buildings of complicated construction designed for many purposes. Imperial palaces on an immense scale tell of the magnificence and luxury of the Roman court; while superbly decorated private houses, as at Pompeii, indicate the importance of the home under the *patria potestas*, which was the basis of Roman law. The Roman love of justice is also evident in the numerous basilicas or courts of law; while theatres indicate a different idea of the drama from that of the Greeks. Amphitheatres were a new departure built for contests between men and wild beasts, and they bear witness to that coarseness yet strength of character which enabled the Romans to bring the whole of the then-known world under their domination; while the great "thermæ" are evidences of the luxury which contributed to the decline and fall of the Empire. The great Roman roads and triumphal arches in various parts of Europe are permanent expressions of Roman power and dominion. Further, by the use of the newly invented concrete and by the employment of arch, vault, and dome, the Romans were largely independent of local building methods, and thus the architecture of Rome was reproduced in all parts of her Empire, and became the foundation of

all European architecture. The decadence of Rome, faithfully portrayed in her later architecture, culminated in her final loss of world power; thus was closed a great chapter both in civilisation and architecture.

A change was now gradually initiated by the introduction of Christianity, a new force in the world's history. The Christian faith was first spread throughout the Roman Empire by means of the military highways, and the Christian propaganda was carried from its birthplace in Judæa, first to Rome and then out from this centre to the extremities of the civilised world. The establishment of Christianity as the State religion resulted in the construction in Rome of over thirty churches of the basilican type. These churches, while retaining pagan architectural features, were gradually modified to meet the requirements of the new religion. A new direction was given to architectural development by the transference of the capital from Rome to Byzantium, when a style was evolved known as Byzantine, which reached its culmination in S. Sophia, Constantinople, and became the official architecture of the Eastern or Greek Church. This style, like the orthodox faith it serves, has remained strangely unchanged even to the present day.

There was a pause in architectural development in Western Europe from the break-up of the Roman Empire till Charlemagne revived the arts in the eighth century, and thus cathedrals, churches, monasteries, and castles were erected, especially during the tenth, eleventh, and twelfth centuries, by the new nations of Europe in a style which was an evolution from late Roman architecture, and is therefore called Romanesque.

The religious enthusiasm, manifested in the Crusades, gave an impetus to the marvellous architectural developments of the Mediæval period, which were in their turn evolved from Romanesque architecture, and to which the name of Gothic has since been given. The wealth and power of the clergy and the Monastic Orders made the Church the one great avenue for advancement in the Middle Ages, and this, aided by popular religious fervour, was responsible for the outburst of church-building in the thirteenth century, when all classes of craftsmen worked continuously on these Gothic churches. A new method of construction was evolved in which small stones were held together in equilibrium, and the pointed arch is the outstanding feature of the style. The pointed "rib and panel" vaults, over lofty church naves, were now held in position by surrounding buttresses and flying buttresses, weighted by pinnacles; these buttresses took the thrust of the roof, and the walls, no longer required to support it, could be replaced with huge windows of stained glass. The development of the style in England clearly shows the power of priests as exemplified in the plain and somewhat ascetic character of the Early English or thirteenth-century style; the dominance of the nobles in the more florid treatment of the Decorated style, and the rise of merchants in the matter-of-fact yet ornamental nature of the Perpendicular or fifteenth-century style, characteristics which were surprisingly similar in all countries of Europe, as each of these classes became the dominant power. Gothic cathedrals hold a unique place in the national life of the countries of Europe as faithful exponents of Mediæval civilisation; for they served as schools, free libraries, museums, and picture-galleries, and in the absence of printed matter they formed the history books, sacred and profane, of the period. Sculpture and stained-glass windows not only presented incidents of Bible history from the Creation to the Redemption, but were also chronicles of the doings of kings and nobles, priests and people, knights and com-

moners. Periodical pilgrimages to the shrines of relics and saints, the veneration of the Virgin Mary, besides changes of ritual, influenced church plans by such additions as processional aisles and chapels. The magnificence of Mediæval cathedrals was largely due to the concentration on them of the artistic energy of the period instead of its being spread, as nowadays, over a variety of buildings. On the secular side, the fortified and frowning castles of the nobles form an eloquent, though silent, testimony to the power of the feudal system, as also to the unsettled condition of Europe. By the commencement of the sixteenth century Gothic architecture, like the Mediæval civilisation which it accompanied, had run its course and was overthrown by a succession of events which altered the face of Europe.

European architecture up to this period may be divided into three main types, differentiated by important constructive principles, viz.: (1) The Greek or trabeated style, consisting of column and beam. (2) The Roman or composite style combining column and semicircular arch. (3) The Gothic or arcuated style, in which the pointed arch prevailed.

There now came a break in the orderly evolution of architectural forms; but we can trace the influences which paved the way for the "Renaissance," that great revival of old Roman architecture, which naturally commenced in Italy. The new movement had its birth in the prosperous commercial city of Florence, where it was fostered by the Medici, and by the writings of Dante, Petrarch, and Boccaccio; while it was further strengthened by the newly discovered Greek and Latin authors, foremost among which were the writings of Vitruvius. Many important factors contributed to freedom of thought and action in an age ripe for change. The invention of printing aided the diffusion of knowledge; the use of gunpowder helped to change methods of warfare; the mariner's compass opened up the New World, and the immigration of Greeks into Europe after the fall of Constantinople in A.D. 1453 was also not without its influence. All this thought and activity affected artists, such as Della Robbia, Ghiberti, Brunelleschi, Alberti, Donatello, Bramante, Peruzzi, Sangallo, Raphael, Vignola, Michelangelo, Sansovino, Palladio, and a host of others. The character of the architecture of new churches and palaces faithfully reflects these changes in favour of Classic traditions by the use, in modified forms, of the Roman Orders of Architecture, circular domes and other Classic features, instead of pointed arches, intersecting vaults, and vertical features of the Gothic period. This movement spread from Italy through France, Germany, Spain, the Netherlands, and England, though variously delayed by distance from the fountain-head.

In France the new style was grafted upon the native Gothic architecture, in a most delightful and picturesque fashion, in royal palaces, town halls, and country houses, rather than in ecclesiastical buildings, for the churches built in the Middle Ages long sufficed for the religious needs of the people. The influence of Italy upon France was the more pronounced because, on the return of Charles VIII and Francis I from their campaigns in Italy, artists and craftsmen followed in their train.

In Germany and the Netherlands the Reformation accompanied or even preceded a fresh building era, but the existence of independent states prevented any such national effort as in France; although ecclesiastical, commercial, and municipal buildings reflect the flourishing condition of some of the principal towns of this part of Europe.

In Spain, after the fall of Granada in A.D. 1492, and the expulsion of

the Moors, the country was unified under Ferdinand and Isabella, and the new style took root, although the Moorish tradition adds special richness and intricacy in architectural decoration.

In England the Renaissance synchronised with the Reformation, and was brought about by many historical events, such as the meeting of Henry VIII with the French king on the Field of the Cloth of Gold, and the subsequent introduction into England of Italian and French architects. The suppression of monasteries (A.D. 1536–40) had brought about the distribution of vast revenues amongst the courtiers of Henry VIII, and had led to the erection of mansions, and also to the building of grammar schools and colleges. The Elizabethan period, when England had become Protestant, is marked by the influx, not only of Huguenot, but also of Flemish and German Protestant craftsmen, who influenced the design of numerous mansions. The Renaissance style, however, in accordance with traditional English methods, was only slowly adopted, and the new mansions retained many features of the castles and manor houses, such as the great hall, long gallery, and mullioned windows. They were designed on generous lines illustrating the scale of hospitality which obtained in the spacious days of Queen Elizabeth. The later Renaissance period came more definitely under Classical influence, owing to the study of Italian art by Inigo Jones, and to the work of Sir Christopher Wren in the latter half of the seventeenth century. After the Great Fire of London, numerous Renaissance churches were erected for the Protestant religion, which demanded a great central preaching space, rather than processional aisles. The Georgian or eighteenth-century period is chiefly remarkable for the number of public and domestic buildings, indicative of the changing social order in England.

In the nineteenth century traditional architecture received many shocks, and suffered many changes. This was an era of revivals of past styles, due to many and varied causes, but chiefly to the predilection of individual architects, and this led to what is known as " the Battle of the Styles." Nevertheless, architecture still continues to reflect the thought of the day, the needs and aspirations of the people, and is an index of the social forces at work, as shown in the erection of museums, elementary schools, public libraries, markets, hospitals, swimming baths, drill halls, colleges, picture and art galleries, and scientific and benevolent institutions. Architecture is now hardly likely to return to any one systematised style ; for from the tree of knowledge of past periods architects can cull their fancy of the moment. Moreover, the increasing variety of national developments—civic, commercial, industrial, and social—together with the use of such new building materials as ferro-concrete, will always make for modifications of any standard style to suit the requirements of changed conditions, and this inevitable adaptation of artistic style to practical purpose is nowhere more conspicuous than in the recent public buildings, business premises, and private houses of America.

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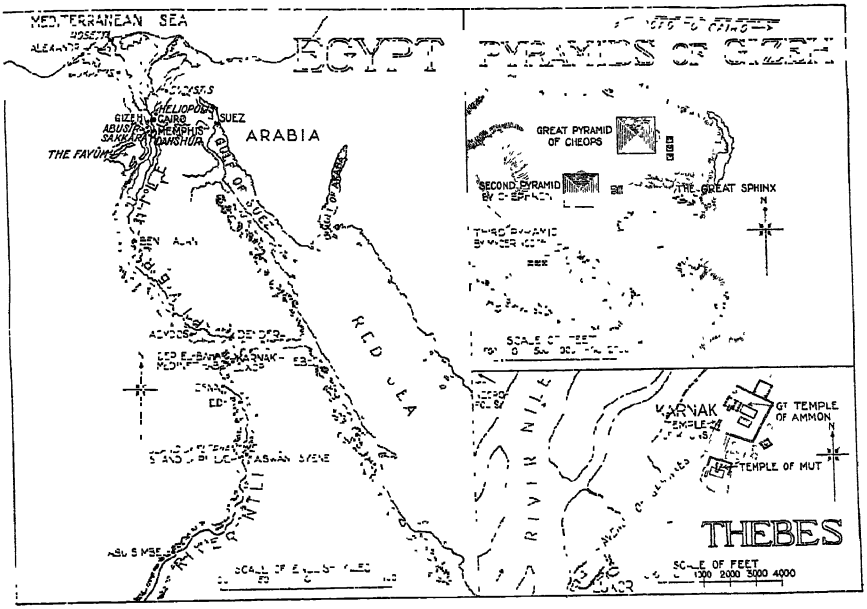
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EGYPTIAN ARCHITECTURE

1. INFLUENCES

i. Geographical.—Egypt, the land of the Pharaohs, of which the ancient name was Kēmi, or the black land, consists of a narrow strip of fertile, alluvial soil along both banks of the Nile bordered by the sandy desert. It was the only country of the ancient world which, by means of the Red Sea, commanded outlets and inlets for foreign trade by both the Mediterranean and Arabian Seas. The Nile itself was of untold value, not only as a trade route and a means of communication, but also chiefly because its overflowing and fertilising waters made desert sands into fruitful fields, and it may truly be described as the rich life-blood which runs in the veins of Egypt. On its banks therefore, from time immemorial, the Egyptians founded their cities, both for the living and the dead, and here are the royal pyramids and the priestly temples.

ii. Geological.—The natural products, such as timber, brick, clay, and stone, largely determine the character of the architecture of a country. Stone, including limestone, sandstone, and alabaster, as well as the harder syenite or granite, basalt and porphyry, was the material chiefly employed, not only for constructive and decorative architectural work, but also for vases, and even for personal ornaments, as the country was poor in metals. Foremost among the productions of Egyptian quarries was the famous limestone of the Mokattam Hills in the north; then came the sandstone in the central districts, and the red granite or syenite of Aswân in the south, and it is partly owing to the hard and durable nature of these materials that so many monuments still exist. The gigantic scale which distinguishes Egyptian architecture was made possible not only by the

materials, but also by the methods employed in the quarrying of enormous blocks of stone, and in transporting and raising them into position. Recent excavations have revealed the use of sun-dried and kiln-burnt bricks for dwelling-houses and royal palaces. There was little building timber, but acacia served for boats and sycamore for mummy cases; while the indigenous date palm, whose fruit is the staple food of the people, was sometimes used in roofing. The quarrying of gigantic stones may have been accomplished by inserting timber wedges which, when swollen by water, split the rock into sizes suitable for the mason.

iii. **Climatic.**—Egypt has been said to have but two seasons, spring and summer. The climate is equable and warm; snow and frost are unknown, while storm, fog, and even rain are rare, and these conditions have contributed to the preservation of the buildings. Such a climate, with its brilliant and continuous sunshine, conduced also to simplicity of design; for, as sufficient light reached the interior through doors and roof slits, there was no need for windows, and thus unbroken massive walls not only protected the interior from the fierce heat of the sun, but also provided an uninterrupted surface for hieroglyphics or pictorial representations of religious ritual, historic incidents, and daily pursuits. In the absence of rain, roof drainage was not a consideration, and flat roofs of thick stone slabs sufficed to cover in the building, and to exclude the heat, while in the temples these roofs served for religious processions.

iv. **Religious.**—The close connection between religion and architecture is everywhere manifest; for the priesthood was powerful, invested with unlimited authority and equipped with all the learning of the age. The religious rites of the Egyptians were traditional, unchangeable, and mysterious, and these traits are reproduced in the architecture, both of tombs and temples. The religion was monotheistic in theory, but became polytheistic in practice through the cult of many gods representing natural phenomena and the heavenly bodies, such as the sun, moon, and stars, and by the deification of animals. Egyptian mythology was further complicated by the multiplication of local gods for different centres. The religious key-note of the Egyptians was one of awe and submission to the great power represented by the sun, while their chief worship was for Osiris, the man-god, who died and rose again, the god of death, and through death of resurrection to life eternal. Judged by the elaborate preparations for the care of their bodies after death, one may say that the Egyptians pre-eminently realised the truth that "in the midst of life we are in death," so the wealthy built themselves lordly tomb-houses against the time when they should enter the great land of silence. The prevalence of superstition is indicated by multitudes of amulets and fetishes, while for the masses of the people the magician with his spells and magic figures was their accepted priest.

In those dawning days of the world's history in Egypt there was no strict dividing line between gods and kings; no need for the doctrine of the divine right of kings; for kings were often ranked, both by themselves and by their people, as actual divinities. Often they filled the double function as kings of their people and priests of their gods, and yet again they were themselves gods, commanding priestly service. On the other hand, the gods themselves were invested with superhuman and therefore with inventive powers, as when the awesome art of writing was regarded as the invention of the god Thoth. So gods, kings, and priests kept sacred mysteries shrouded from the public vision, and the people groped in darkness

and reached out vain hands to a world outside their own experience, which was only partially revealed to them through signs and symbols, and against the evil of which they sought to protect themselves by amulets and offerings. The gods were frequently associated in triads; thus Ammon the sun-god, Mut his wife, the mother of all things, and Khons their son, the moon-god, were the great Theban triad; while Ptah, a creator, Sekhet, a fire goddess, and I-em-hetep, a medicine god, formed the Memphis triad. Other gods were the powerful Osiris, god of the dead; Isis, his wife; Horus, god of the rising sun; Hathor, goddess of love; Set, dread god of evil, and Serapis, a bull-headed god, representing that strange cult of the sacred bulls. All these and many more, to the number of over 2,000, occur in turn or in combination, and the unchanging, traditional architecture of ancient Egypt appears and re-appears in all the jealously closed temples, erected for the use of kings and priests in the service of the gods. The outstanding feature of the religion of the Egyptians was their strong belief in a future state, hence the erection of such everlasting monuments as pyramids for the preservation of the dead. According to Herodotus, the dwelling-house was regarded as a temporary lodging, and the tomb as the permanent abode. This religious attitude is typified in the two predominant types of buildings, and the supremacy of the solemn and mysterious temples of the gods is only challenged by the enduring and tremendous tomb pyramids of the kings. Here too is an epitome of the Egyptian outlook: hope of eternal life, the supremacy of the gods in the hidden world, the tyranny of kings in the seen world, and the power of the priests in touch with both worlds.

v. Social.—Prehistoric ages in Egypt are veiled in the vague uncertainty of days that have no record save in some undated masonry that is from time to time dug out of the all-enveloping desert sands. Egyptian civilisation, however, is the most ancient of which we have any clear knowledge. Our information is derived from the Old Testament, and from Greek and Latin authors, as well as from internal records on papyri and tablets, but more particularly from Egyptian buildings with their inscriptions, through which it is traced back more than 4,000 years before the Christian era. It was the custom to record matters of history on temples, and of domestic and social interest on tombs and stelæ.

Social and industrial conditions in Egypt were largely determined by the uninterrupted rule of a centralised, despotic government, which employed vast armies of unpaid labourers in the erection of monumental buildings when the annual inundations made agriculture impossible; thus the continuity of social and industrial conditions may be traced in the building activities of the long line of Pharaohs. Prisoners of war were also turned on to the same work, and during the reign of Rameses II there were so many captives and foreigners in the country employed on public works that, as recorded in Exodus (i. 9–11), the natives viewed with alarm the growing power of these strangers in their midst. The Bible story of the two centuries of captivity of the Children of Israel in Egypt throws a vivid light on the system of labour, on the tyranny of overseers, on the tasks imposed, and on the social conditions of the labourers employed by the Pharaohs to build these enduring monuments of Old Egypt. Slave labour is written over them all, and we can picture the gangs of slaves working in the stone quarries, toiling on the rafts to drift the building materials down the Nile, and then hoisting them into position. Social life is also graphically depicted in wall-sculptures of tombs, such as that of the architect Thi, which portray the Egyptians at war, at play, at

the chase, on the farm and in the weaving shed and workshop, as well as at business. Craftsmanship was evidently held in high esteem, and the Egyptians attained great skill in weaving, glass-blowing, pottery-turning, metal-working, and in making musical instruments, jewellery, and furniture. All these flourishing industries secured for the industrious Egyptians a high degree of prosperity. The pursuit of learning, astronomy, mathematics, and philosophy was continuously carried on, especially by the priests, and much Egyptian literature has been preserved on papyri made from the pith of the papyrus plant, of which the Harris papyrus in the British Museum, with its account of the reign of Rameses III, is a notable example. New discoveries of such records as the Turin papyrus and of tablets, such as those of Abydos, Sakkâra, and Karnak, as well as of funeral stelæ, make increasing contributions to our knowledge of Egyptian life and customs.

The kings of ancient Egypt are known as Pharaohs, a name given them by the Hebrews and derived from the Egyptian Peraa, the Great House. The Pharaohs, like the Colossi of Memnon, are silhouetted against the mysterious desert background; sometimes they appear as gods or demi-gods, often as mystery priests, generally as builders, invariably as despots, but never as fathers of their people. A study of the social system in ancient Egypt conjures up a sinister picture of an almighty Pharaoh at one end of the scale and millions of slaves and forced labourers at the other, and of this system the royal pyramids and priestly temples are the outward and material testimony to this day. The Pharaohs practised religious rites, patronised the arts, protected their country, waged wars, fostered trading enterprise, and encouraged industries and handicrafts, but the common people would seem to have been of no account in all these ambitious undertakings for the aggrandisement of the great House of Pharaoh. All these conditions were as traditional and unchanging in their general aspect throughout successive dynasties as was Egyptian architecture, and both alike were the product of the Nile and the surrounding desert.

The Pharaohs have been divided into thirty dynasties by Manetho, an Egyptian priest who, about B.C. 300, compiled a history of Egypt in Greek. These dynasties are here grouped in three divisions with the approximate dates of Sir E. A. Wallis Budge, but authorities differ widely, especially as to the beginning of the historic period, and some Egyptologists even date the Ancient Kingdom back to B.C. 5000.

1. Ancient Kingdom (Dynasties I–XI), B.C. 4400–2466.—Menes, the first dynastic king, is reputed to have founded Memphis in Lower Egypt, and it remained the capital until the "New Empire," though Thebes was growing into prominence. During the Third Dynasty civilisation progressed; living-houses were built of brick and tomb-houses or "mastabas" were made to take the body at full length. The art of writing was practised, and the hieroglyphic system began. From flat-topped "mastabas" of nobles we now pass to the pointed pyramids of kings, those fortresses of the royal dead which held out against storm and sand only to be rifled by alien marauders. The Fourth Dynasty saw the building of many pyramids, first by Seneferu at Mêdûm and Dahshûr, then by Cheops—ever associated with the mystery of the Sphinx—who built the Great Pyramid, while Chephren erected the second, and Mykerinos the third, all at Gizeh, and the Fifth Dynasty is marked by the Pyramid of Unas at Sakkâra. The Sixth Dynasty is noted for the Pyramid of Pepi I, also at Sakkâra, for which the quarries of Syene were worked. Trade and handicrafts

flourished, and a record of an expedition to Punt for embalming-myrrh shows how home crafts depended on foreign products even at that day.

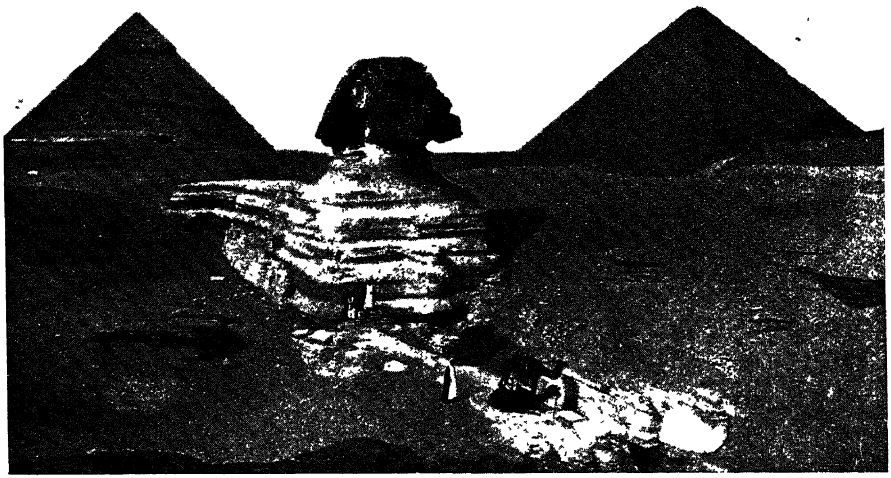
2. Middle Kingdom (Dynasties XII–XVII), B.C. 2466–1600.—Amenemhat I of the Twelfth Dynasty was energetic and enterprising; he brought social order out of anarchy, made a survey of the country, set boundaries to the provinces, carried out irrigation, worked the quarries at Tura, restored the temples and founded the great Temple at Karnak. Other kings there were, such as the Usertsens, who fostered commerce and built temples and pyramids. Amenemhat III, a man of many parts, fostered art and industry, irrigated the Fayûm, and probably built there the Labyrinth described by Herodotus. Monuments in the British Museum testify to his personality, while scarabs and stelæ show the general prosperity and progress under the Twelfth Dynasty. Then followed five Dynasties of such confusion that even the succession of the kings is uncertain. Nomad tribes from Syria and the eastern desert overran the Delta and their leaders became the Hyksos or Shepherd Kings who, though they adopted the Egyptian language and religion, were so hated by the people that there was no rest in the land till the usurpers were driven out at the beginning of the Eighteenth Dynasty.

3. New Empire (Dynasties XVIII–XXX), B.C. 1600–332.—The New Empire was glorious alike in the arts of peace and war. The founder, Amasis I, finally crushed the Hyksos in the Delta, pursued them into Palestine, suppressed sedition and inaugurated the culminating epoch of Egyptian art when Thebes became the capital and many buildings were erected. Thothmes I (B.C. 1550) commenced those additions to the Temple of Ammon, Karnak, by which successive Pharaohs made it the most imposing building in Egypt, and he was the first Pharaoh buried in the Tombs of the Kings in the Theban Mountains. Egypt prospered under the firm rule of kings who had now made themselves the paramount power, free from feudal interference, and Egypt became more of a military state. Then came Hatshepsu, the "Queen Elizabeth" of Egypt, who patronised the arts of peace, re-established religious rites, and carved out of the mountain-side her fascinating terraced Temple of Dêr-el-Bahari, which, covered with coloured pictures of the pursuits she loved, gleams like a gem set in the living rock. Thothmes III was one of the greatest of the Pharaohs and is famous alike for foreign wars and home reforms, while he rebuilt and decorated many temples. Thothmes IV (B.C. 1450) cleared away the sand from the Great Sphinx, as recorded on the tablet between its paws. Amenophis III built the Temple at Luxor, dignified that at Karnak by pylons and sphinxes, and erected the famous Colossi of Memnon. Amenophis IV daringly broke away from dynastic and religious traditions, deserted Thebes, and founded his capital at Tel-el-Amarna with a great palace and a temple to the sole god Aten, whose symbol was the "solar disc." A heretic Pharaoh is a striking anomaly in a country bound by such strong chains to tradition and orthodoxy. The Tomb of Tut-ankh-Amen, who followed, was discovered A.D. 1922 (p. 26). Rameses I (B.C. 1350), founder of the Nineteenth Dynasty, the most brilliant epoch of Egyptian art, commenced the great Hypostyle Hall at Karnak. Seti I carried on wars without and temple-building within, continued his father's work at Karnak, restored many shattered monuments, built his great Temple at Abydos and his own sepulchre among the Tombs of the Kings. Rameses II (B.C. 1330), surnamed "the Great" and the "Pharaoh of the Oppression," exploited the labour of the Israelites to build store cities. He finished and erected many temples

such as the Rock Temple at Abu-Simbel, the Hypostyle Hall at Karnak, and the Ramesseum at Thebes, but craftsmanship had begun to deteriorate. Rameses III (B.C. 1200) was a religious devotee who made such offerings to the priests that about one-sixth of the land belonged to the temple revenues. The name of Rameses was borne by nine successive kings, whose power waned as that of the priests of Ammon waxed strong. It is significant of the times that, while the temples of the gods were still respected, the tombs of the kings were desecrated and rifled of their treasure, and so the Twentieth Dynasty tottered to its end. The Twenty-Sixth Dynasty, a period of good government and trade prosperity, saw a revival of the art of the early period. Psammetichus I (B.C. 666) encouraged the immigration of Greeks, who brought in new ideas. Then, after a period of Assyrian invasions, Egypt again extended her Mediterranean trade, developed the arts and crafts of bronze casting, pottery, and portrait painting, and attained a high standard in commercial and legal procedure. Necho (B.C. 612) attempted a canal between the Red Sea and the Nile, but the undertaking was only completed by Darius (B.C. 521–486). From B.C. 525 Egypt was a Persian province for about 100 years under Cambyses the conqueror, Darius the administrator, Xerxes the tyrant, and other rulers.

4. The Ptolemaic Period (B.C. 332–30).—Alexander the Great, who rescued the Egyptians from their hated oppressors, was hailed by the priests as the son of Ammon. He founded Alexandria as the capital, and it became the centre of Greek culture. On his death in B.C. 323, Egypt fell to his general, Ptolemy, and for three centuries the lower valley of the Nile was the seat of a prosperous and powerful kingdom. Greek customs and methods of government crept in, but the Ptolemies upheld the gods, built temples of the native type at Dendera, Esna, Edfu, and Philæ, patronised native art, and married the daughters of Egypt. The reign of Ptolemy II is famous for the Pharos, or light-house, the history by Manetho, and the production of the Septuagint. Ptolemy V was so great a benefactor of the temples that the priests accorded honours to him and his ancestors in a decree which has proved the "open sesame" to our knowledge of Ancient Egypt; for this threefold inscription in hieroglyphic, demotic, and Greek writing on the Rosetta Stone, dug up in A.D. 1798 and now in the British Museum, provided a long-sought key to those wonderful hieroglyphic records of Egyptian history. Struggles with Rome were continuous, and on the death of Cleopatra Egypt became a Roman province.

5. The Roman Period (B.C. 30—A.D. 395).—Egypt under Cæsar entered on another phase of prosperity, and many Roman emperors took Egyptian titles and even inscribed them, in the Egyptian manner, in cartouches. Thus did the Imperial masters of the world seek to find favour with this important grain-producing province. From this period dates the famous "Pharaoh's Bed" at Philæ. Hadrian twice included Egypt, as he did Britain, in his Imperial visits. Under Constantine, Roman control in Egypt extended even to religion, when in A.D. 324 Christianity was declared to be the religion of the Empire; the Bible was translated into Coptic, but controversies and troubles soon overtook the Christians in Egypt. When Theodosius the Great issued his edict in A.D. 381 many temples were either diverted to Christian use or churches were built within their precincts—a curious mingling in architecture of the old and the new. Thus a change passed over the spirit of Old Egypt and dealt the death-blow to her indigenous and traditional architecture, which no

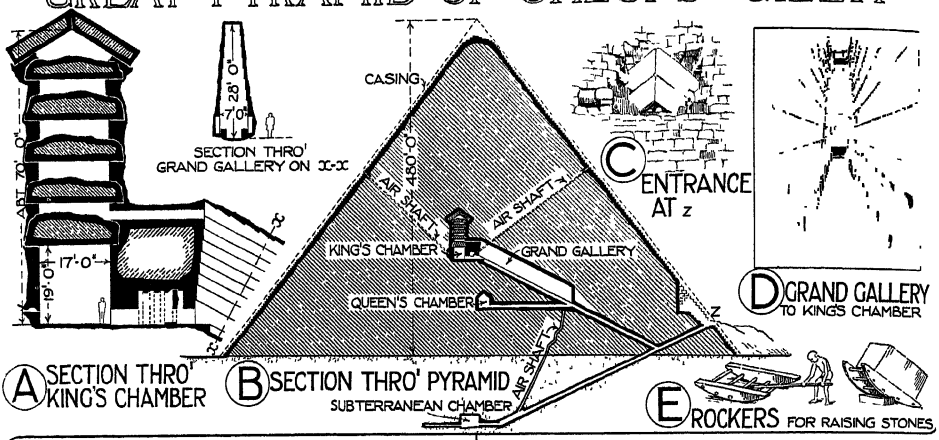


A. The Sphinx, Gizeh, near Cairo (Pyramids in background)

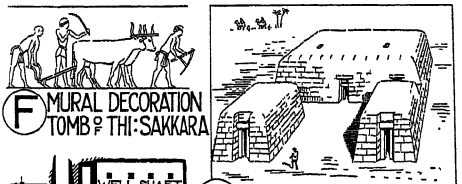


B. Tombs at Beni Hasan

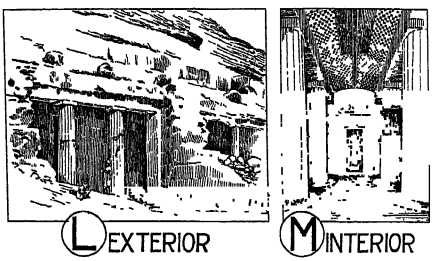
GREAT PYRAMID OF CHEOPS : GIZEH



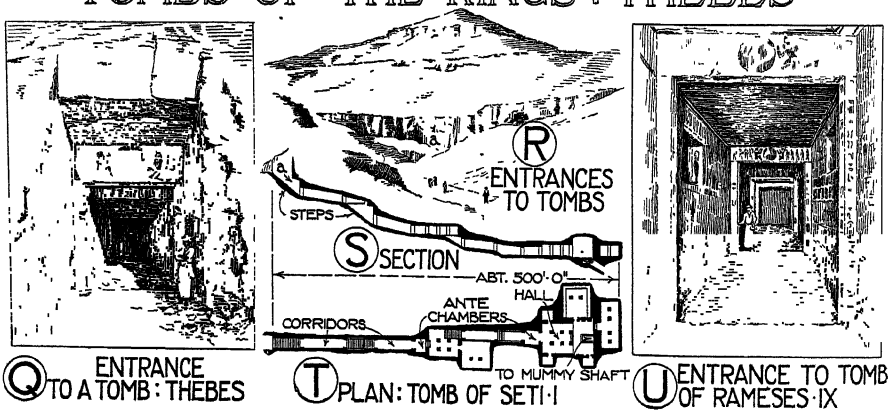
MASTABA TOMBS



TOMBS: BENI-HASAN



TOMBS OF THE KINGS : THEBES



longer served its original purpose and so ceased to be a living growth and became merely a relic of the past.

6. Later Periods (A.D. 395 to the present day).—The Byzantine Period (A.D. 395–640).—Changes of Empire influenced politics and art even in the distant provinces, and when Egypt was ruled by the Eastern Roman emperors from Constantinople, Christian churches were erected in the Byzantine style, another mingling of east and west, which has placed domed Byzantine churches side by side with trabeated Egyptian temples (p. 26).

Egypt under the Arabs (A.D. 640–1517).—The country fell under the influence of those social customs which are inextricably bound up with the Mahometan religion; conditions which from A.D. 1517 onwards were further enforced under Ottoman rule (p. 832).

Egypt then passed in the nineteenth century first under French and in A.D. 1881 under British protection, which ushered in a new and brighter era for all classes of her population. Since A.D. 1914 her destinies have been presided over by a Sultan under British suzerainty, and finally in 1923 Egypt became an independent State.

vi. Historical.—Historical influences, as distinct from internal and social, are here considered as arising from military and commercial contact with other countries. It is interesting to observe that historical events are generally recorded on temples, and social matters on tombs. Under social influences we have sketched the successive dynasties and have indicated those kings whose personality left the greatest impression upon their country. It now therefore only remains to show the salient historical or external events and foreign wars which were factors in Egyptian development. The earliest historical incidents are naturally connected with the land nearest to the Egyptian borders, i.e. the Sudan, the country of the Nubians or Ethiopians. As early as the Fourth Dynasty, according to the Palermo Stele, Seneferu of the False Pyramid raided the Sudan and brought back prisoners and loot from that vast territory which is the Biblical Cush, and which, during the Middle Kingdom, was finally conquered and, with its gold, copper, and turquoise mines, added to the realm of Egypt. The masterful Amenemhat I subjugated four tribes in the coveted Sudan, and his son Usertsen I exacted tribute there, worked the copper mines and built a fort and a temple at Wadi Halfa; while Usertsen III finally conquered that country and built forts along the Nile to protect the transport of gold. Various kings sent expeditions to Sinai for copper, for Egypt depended on other countries for metals. Later, the incursions of nomadic tribes resulted in centuries of hated Hyksos rule and there were often two rival kings, till after years of strife the usurpers were expelled and pursued into Syria by Amasis I. He invaded Nubia and exacted more tribute, as did also the next three Pharaohs, and Egyptian power penetrated too into Western Asia as far as the Euphrates. Queen Hatshepsu carried out a trade expedition to Punt in the south to secure ebony, ivory, gold, and myrrh for temple service and for the embalming of the dead, and all the story of the expedition is recorded on her temple walls of Dêr-el-Bahari. The great Thothmes III waged victorious wars in Phœnicia, Western Asia, and the Sudan, and the treasure he secured was devoted to temple building, including a great Hall of Columns at Karnak where his successes are proudly recorded. So wars went on against Syria and Nubia till Amenophis III, the Memnon of the Greeks, declared himself to be not only the conqueror, but also the god of Nubia. He carried on friendly intercourse with Asia, and through intermarriage introduced a foreign

element into Egypt, which largely found expression in the monotheistic tendencies of his son who forsook Ammon, king of gods, and worshipped Aten as the sole god. He was a great warrior, a mighty hunter, and also a prolific builder, to whose genius his new capital, Tel-el-Amarna, and many monuments bear witness; while the Tel-el-Amarna tablets record his foreign expeditions. He was a priest rather than a soldier, and while he was busy building his new capital and temple for the god of his choice he lost his hold over the Empire in Asia. Seti I reverted to raids on the Sudan for gold and on Sinai for copper, and his activities were emulated by his son, Rameses the Great, who carried his sword into Syria as far as Beyrout, and married a daughter of that country. More a builder than a soldier, his name is inscribed on well-nigh every Egyptian monument, while he is often referred to as the " Pharaoh of the Oppression."

Meneptah, perhaps the " Pharaoh of the Exodus," had to combat attacks from Lybia and from the Mediterranean coasts, while Rameses III conquered, both by land and sea, armies from Crete, Cyprus, Syria, and Lybia, and so the sea-power of Egypt was established. Then Egypt gradually declined in power till the end of the Twentieth Dynasty, when followed another period of inactivity, till Shishak I, in the Twenty-second Dynasty, re-established Egyptian rule in Syria, Nubia, and Palestine, and pillaged Jerusalem. The Assyrian Empire now threatened the peace of Egypt (B.C. 670) and Esarhaddon defeated the Egyptians and took Memphis, while Ashur-bani-pal, his son, invaded the country and sacked Thebes. Psammetichus (B.C. 666) began his reign as a mere vassal of Assyria, but with help from Asia Minor he threw off the foreign yoke and even restored prosperity and re-established foreign trade along the Mediterranean, and this military and commercial intercourse introduced new ideas and once again the Delta, with Memphis as the capital, became the centre of Egyptian power. Under Necho, however, Egypt fell again under Assyrian rule. Then came Cambyses, the Persian, who dethroned Psammetichus III, and for one hundred years Egypt was a Persian province, prosperous under Darius, oppressed under Xerxes the Great, and in revolt under Artaxerxes I; but Artaxerxes III again secured Persian ascendency over Nectanebus II, the last native king of the Egyptians, who chafed under Persian rule till Alexander the Great (B.C. 332) defeated Darius III and was hailed at Memphis as saviour and as the son of Ammon. His capital, Alexandria, became the centre for Greek scholars and artists, and thus did the Greeks again influence architecture and the allied arts.

The first of the Ptolemies, the Greek general who succeeded Alexander, encouraged the influx of Jewish traders, and this increased the prosperity of the country. So the tale of the Ptolemies went on with occasional wars and expeditions, but Ptolemy V (B.C. 205) had invoked the help of Rome against Syria, and later it came about that Ptolemy XIV and his sister Cleopatra were placed by their father under the care of Rome; finally, on the death of Cleopatra, Egypt became a Roman province (B.C. 30). So Greek officials gave way to Roman, and Egypt was exploited as the granary of Rome, while Nubia was invaded for her mineral wealth, and Claudius even succeeded in diverting the Indian trade from Arabia to Egypt. Under Nero it is said that Christianity first reached Egypt, where it soon entered on many conflicts and, as elsewhere, suffered many vicissitudes. At times many Christian or Coptic churches were either erected or adapted, and by the time of Hadrian architecture had assumed a Græco-Roman style. During the reign of Constantine the Great (A.D. 324–337) the government of Egypt was reorganised, and on

the division of the Roman Empire Egypt came under the Eastern Emperor at Constantinople. Under Justinian (A.D. 527–565) a new and more stable administration was formed, but in A.D. 616 the country was captured by the Persians, and in A.D. 640 passed to the Mahometans, whose architecture is described later (p. 838). Thus art in Ancient Egypt continued strangely unchanged through various phases of foreign influence from Assyria, Persia, Greece, and Rome ; and, through all, the indigenous architecture maintained that solemn dignity so suited to the immense stretches of surrounding desert.

2. ARCHITECTURAL CHARACTER

Ancient Egyptian architecture was carried on, as far as the historical period is concerned, from about B.C. 5000 to the first century of the Christian Era.

The primitive architecture in the valley of the Nile appears to have consisted of puddled clay and reeds, or of sun-baked bricks, and some of its original character is seen in the later monumental style of stone and granite. Bundles of reeds were placed upright in the ground with stouter bundles at the angles of the building, and all were held together at the top by other horizontal bundles. The pressure of the flat clay roofs on the wall reeds may have produced the characteristic Egyptian " gorge " cornice, while the horizontal binders and stout angle bundles survived in the roll moulding of stone cornices and wall angles of the historic period (pp. 28, 41 J). While this was probably the prototype of Egyptian masonry walls, various theories have been advanced to account for the external slope or " batter " of the wall face, which is like a sort of continuous buttress (pp. 28, 31 A), while the inner side remains vertical. Viollet-le-Duc suggests that this practice was derived from the pyramids, which were found to resist earthquake shocks, while vertical-faced walls were thrown down, and he says that this form of construction was even enjoined by royal decree. Flinders Petrie and other writers point out that the Egyptians laid the bricks in concave beds for greater security, thus tilting the courses upwards towards the angles of the building, and giving the walls an inward inclination towards the top. The stability of walls would in any case be increased by tilting them inwards, whether the form was derived from clay-covered reeds or from bricks in concave courses. Whatever the origin or the object, instinct seems to have led these old Egyptians to avoid a vertical external face to their walls, and, whether in pyramids, tombs, or temples, this " batter " remained throughout one of the chief characteristics of their architecture. The surface decoration of the masonry walls is also held to have been derived from the pictures scratched on the early mud or plastered walls, which manifestly did not lend themselves to modelled or projecting ornament, though their flat and windowless surfaces were eminently suitable for incised relief and explanatory hieroglyphics (pp. 38, 42)—a method of popular teaching which has its parallel in the sculptured façades and stained glass windows of Mediæval cathedrals. Egyptian columns (p. 41) have a distinctive character, and some suggest a vegetable origin, with shafts curved inwards at the base, like the sheathed stalk of a papyrus or lotus plant. One type of column may also be regarded as a reproduction in stone of reeds bound together and crowned with a capital in the form of a lotus bud (p. 41 G) or calyx of the papyrus flower (p. 41 C) or of the ubiquitous

palm leaf. Brick vaults appear to have been constructed, as they sometimes are to this day, without " centering " or temporary support, but they were only used in utilitarian structures.

Egyptian monumental architecture, which is essentially a columnar and trabeated style, was mainly employed on pyramids, tombs, and temples, in contrast to the Assyrian, its nearest in age, which was devoted to spacious palaces for warrior-kings. Egyptian temples (p. 23), approached by impressive avenues of sphinxes—mythical monsters, each with the body of a lion and the head of a man, hawk, ram, or woman—possess in their massive pylons, great courts, hypostyle halls, mysterious chambers, and dark corridors a special character; for each temple grew according to the increasing requirements of a powerful priesthood, or to satisfy the pious ambition of successive kings. Greek temples were each planned as one homogeneous whole, to shelter the statue of the god, and the component parts were all essential to the complete design, while Egyptian temples were often nothing but a string of successive buildings diminishing in height behind their imposing pylons.

Egyptian architecture proceeded along uninterrupted traditions, and when necessity dictated a change in the methods of construction or in the materials used, the traditional forms, hallowed by long use, were perpetuated in spite of novel conditions. It is impressive by its solemnity and gloom as well as by its ponderous solidity, which suggests that the buildings were intended to last to all eternity. This idea is not without foundation when we realise that the avowed purpose of the pyramids was to preserve the body for the return of the soul after long æons of uncounted time.

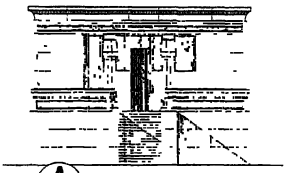
3. EXAMPLES

THE GREAT SPHINX

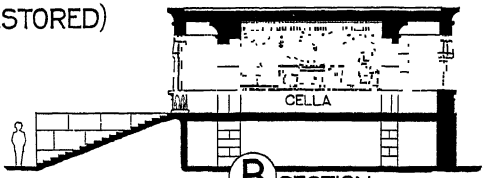
The Great Sphinx, Gizeh (pp. 11, 17), near Cairo, is the most famous of all the mystery-laden monuments of Old Egypt. It has remained immutable through forgotten centuries; the austere guardian alike of the illimitable desert, and of the lost ages of the world, which stretch out, as it were, behind its gigantic form. For centuries it was jealously hidden by desert sand, until it was unearthed in A.D. 1816 by Caviglia in the ancient quarry where it first took shape, partly hewn out of the living rock, partly built up of masonry and finished off by the sculptor's chisel; while between the great paws there is what may have been a sacrificial altar slab. The date of this perplexing monument, whose purpose is veiled in impenetrable mystery, is a matter of doubt, but it is known to have existed in the reign of Cheops previous to B.C. 3700, and it was certainly repaired by Chephren, his successor. The Sphinx, in the form of a semi-recumbent lion with the head of a man, probably representing Horus, god of the rising sun, is 65 ft. high and 150 ft. long, while the face is 13 ft. 6 ins. wide, and the mouth 8 ft. 6 ins. The mutilation of the monument dates from the first Mahometan invasion, and the sculptured beard, which was found buried in the sand, is now in the British Museum. The Sphinx has long since passed into a symbol for an insoluble problem, and there still seems little prospect of raising the veil of mystery in which it is shrouded, or of finding the key to the sanctuary of its inner meaning.

MAMMISI TEMPLE : ISLAND of ELEPHANTINE

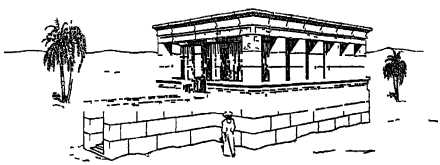
(RESTORED)



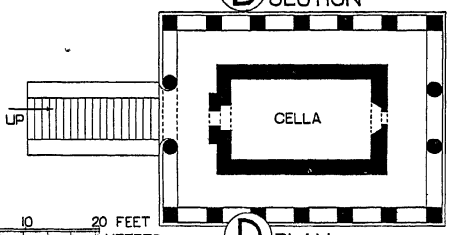
A ELEVATION



B SECTION



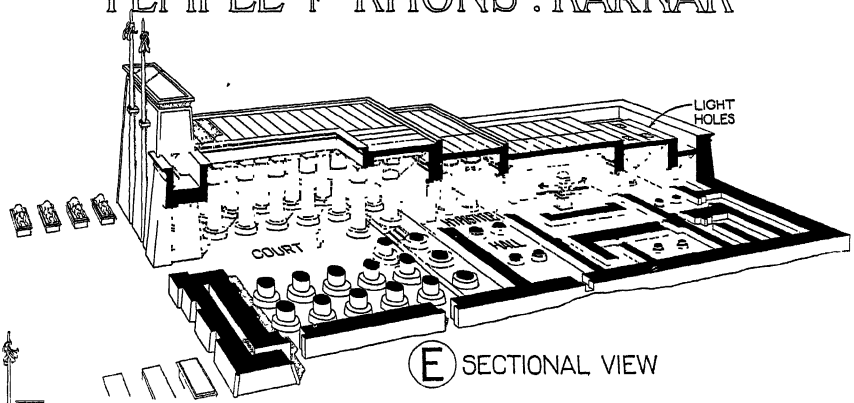
C VIEW



D PLAN

10 5 0 10 20 FEET
1 0 1 2 3 4 5 6 METRES

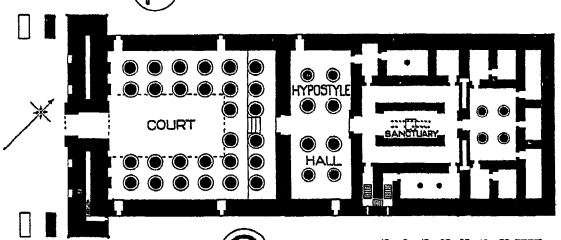
TEMPLE of KHONS : KARNAK



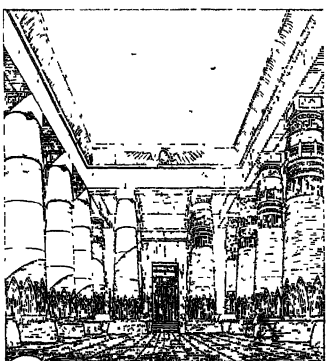
E SECTIONAL VIEW



F LONGITUDINAL SECTION

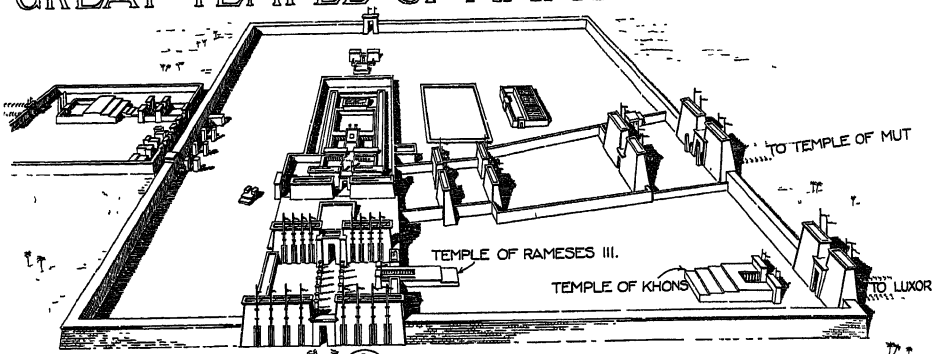


G PLAN 10 0 10 20 30 40 50 FEET
5 0 5 10 15 METRES

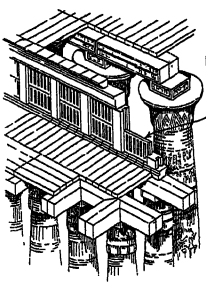


H COURT FROM ENTRANCE

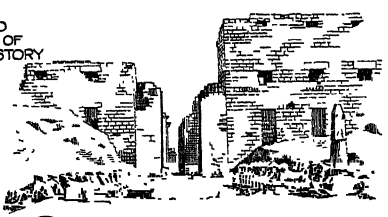
GREAT TEMPLE OF AMMON: KARNAK



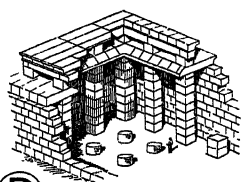
A RESTORED VIEW



B THE CLEARSTORY HYPOSTYLE HALL



C ENTRANCE PYLONS (AS EXISTING)

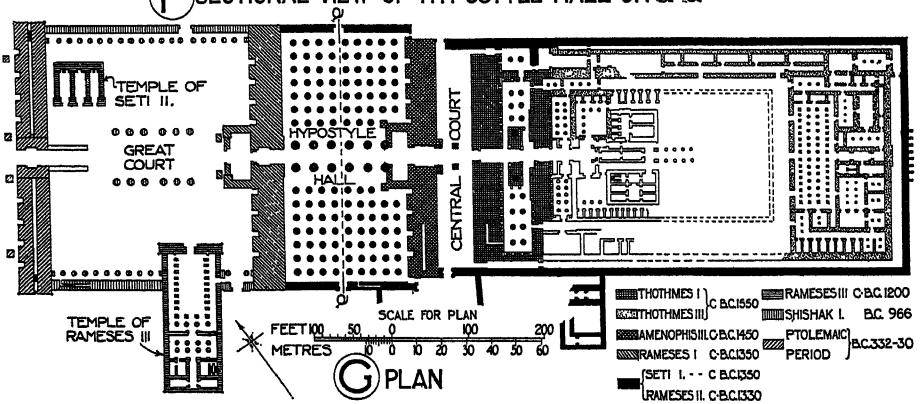


D ROOF APERTURES LIGHTING INNER HALLS



E AUXILIARY LIGHT-HOLES HYPOSTYLE HALL

F SECTIONAL VIEW OF HYPOSTYLE HALL ON a.-a.



G PLAN

TOMBS

The Tombs were of three main types : (*a*) Royal pyramids, (*b*) Mastabas, and (*c*) Rock-hewn tombs.

(*a*) *Royal pyramids.*—The **Pyramids of Gizeh**, near Cairo (p. 11), erected during the Fourth Dynasty (B.C. 3733–3566), form one of several groups within the necropolis of the ancient capital city of Memphis, and rank among the oldest of Egyptian monuments (p. 17 A). These pyramids were built by the kings as their tombs, to secure the preservation of the body till that time should have passed when, according to their belief in immortality, the soul would once more return to the body. Herodotus and many writers have described the manner of constructing these mounds of masonry, which were the most extravagant of all ancient structures ; for the relative return in the higher beauties of art was small compared with the outlay of labour and material. Small too was their utility, for they failed in the object for which they were designed, as they were successively rifled by Persians, Romans, and Arabs.

The **Great Pyramid of Cheops** (Khufu) (B.C. 3733) (pp.17A, 18), originally 482 ft. high, is 760 ft. square on plan with an area of about 13 acres, or more than twice that of S. Peter, Rome. The four sides, which, as in all the pyramids, face the cardinal points, are nearly equilateral triangles, which make an angle of about 52 degrees with the ground, and meet at the apex. It is remarkable that such huge blocks of stone, many of which measure 20 ft. by 6 ft., should be so perfectly finished and fitted to one another. The methods of quarrying and transporting these blocks over long distances by land and water, and of raising them into position, are still uncertain, although various theories have been proposed by M. Choisy and other writers, and one method suggested is that it was effected by rockers (p. 18 E). The entrance (p. 18 C), which is on the northern side, is 47 ft. 6 ins. above the ground level, and opens into a passage, which, as shown (p. 18 B), first slopes downwards, and afterwards ascends by way of the Grand Gallery to the heart of the pyramid, where is situated the entrance to the tomb chamber of the king (34 ft. 6 ins. by 17 ft., and 19 ft. high), protected by a massive stone portcullis, weighing about 50 tons, fitting into a rebate or recess (p. 18 A). Here, in a triple sheath of granite sarcophagus, sycamore coffin, and bituminous mummy cloths, lay the body of the dead Pharaoh ; while the Ka was in faithful attendance on the royal dead till the soul should return to the body it had temporarily deserted. Two air shafts (8 ins. by 6 ins.) lead to the outer face of the pyramid. In origin they may have been either sanitary, for ventilation, or mystical, as passages for the Ka. The upper part of this chamber is elaborately constructed with stones one above another, probably to uphold the superincumbent weight of masonry (p. 18 A). The two other chambers in the Great Pyramid are the Queen's Chamber, connected with a passage leading off that to the King's Chamber, and another below the ground level. The exterior was originally cased with a sloping face of limestone slabs, which have now almost entirely disappeared, exposing the stepped surface beneath.

The **Pyramid of Chephren** (Khafra) (B.C. 3666) (pp. 11, 17 A), and the **Pyramid of Mykerinos** (Menkaura) (B.C. 3633), which still retains much of its casing, complete the triad of the pyramid group at Gizeh, but there are other important pyramids at Abu-Roâsh, Zawyet-el-Aryân, Abusîr, Sakkâra, and Dahshûr.

(*b*) *Mastabas.*—The Mastabas were rectangular, flat-roofed structures

with sides sloping at an angle of about 75 degrees, and they were probably derived from the rude heaps of stones piled over earlier mummy holes (p. 18 J). They consisted of three parts: (i) The outer chamber, in which were placed the offerings to the Ka or " double," decorated with festal and other scenes which are valuable from an historical standpoint. (ii) The inner secret chamber, known as the " serdab," which contained statues of the deceased members of the family. (iii) The chamber containing the sarcophagus, reached by an underground shaft.

The **Mastaba of Thi, Sakkâra** (p. 18 F G H),well preserved and restored, dates from the Fifth Dynasty, and was erected to Thi, who held the position of royal architect and superintendent of pyramids. It consists of a small vestibule, beyond which is a large court, where offerings to the deceased were made, and from which a mummy shaft led to the tomb chamber. The masonry is accurately jointed, and the bas-reliefs are some of the finest and most interesting in Egypt (p. 18 F). A second tomb chamber, 22 ft. 9 ins. by 23 ft. 9 ins. and 12 ft. 6 ins. high, has mural reliefs which represent harvesting, ship-building, slaughtering of sacrificial animals, as well as arts and crafts of Old Egypt; while Thi himself is pictured in a papyrus thicket, sailing through the marshes.

(*c*) ***Rock-hewn tombs.*** — The **Tombs, Beni Hasan** (B.C. 2500–2200), to the number of thirty-nine, form a remarkable group cut in the rock (p. 17 B, 18 L–P), and belong to the Twelfth Dynasty, which was marked by great progress in the arts. The entrance to the Tomb of Khnemu-hetep has two sixteen-sided columns, slightly fluted and with an entasis, and they are sometimes considered to be the prototype of the Greek Doric Order, and the projecting cornice has representations of beam-ends carved out of the solid rock, thus reproducing in stone a timber form.

The **Tombs of the Kings, Thebes** (p. 18 Q–U), form a contrast with the pyramids of the earlier kings. These tombs, cut deep into the mountain rock, consist of chambers connected by passages, and were intended only for the reception of the royal sarcophagi. The most important are those of Rameses III, IV, and IX and of Seti I, discovered by Belzoni in A.D. 1817. They are all very similar, with corridors cut in the rock, each leading to an ante-room, beyond which is the sepulchral chamber, containing the granite sarcophagus. Hieroglyphics on the walls include texts relating to ceremonies for ensuring immortality, while coloured reliefs represent the departed as sailing through the under-world, accompanied by the sun-god.

The world has recently been thrilled by the discovery by Lord Carnarvon and Mr. Carter of Tut-ankh-Amen's Tomb (B.C. 1400) (p. 43), with its unique art treasures, now mostly preserved in the Cairo museum.

Sepulchral temples, such as those of Dêr-el-Bahari, Medînet Habu, and the Ramesseum, were attached to the tombs for funereal rites and offerings.

TEMPLES

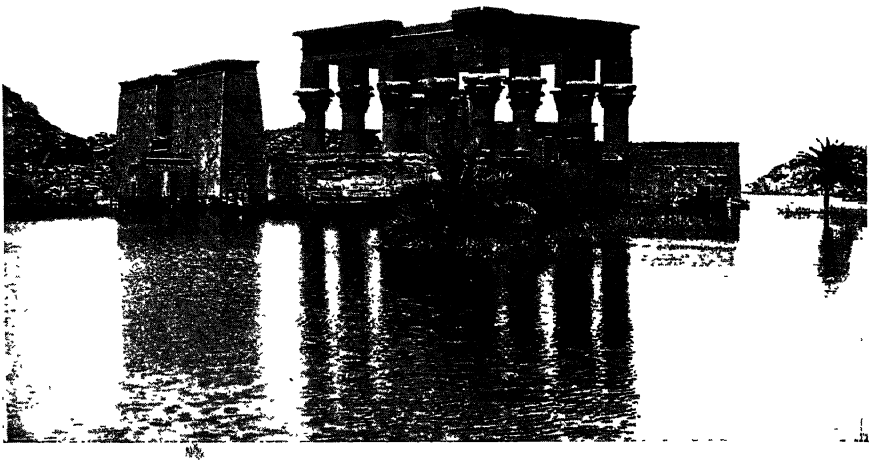
The temples were sanctuaries into which only kings and priests penetrated, and they differ therefore from Greek temples, Christian churches, and Mahometan mosques; for they were not used for common prayer or public ritual, but for mysterious rites and priestly processions which took place within the jealously guarded precincts. Only king and priests might pass beyond the hypostyle hall, and the temple was therefore a kind of royal oratory, built by the king as a pledge of his piety and as an offering to the gods. There does not appear to have been any uniform system governing the main direction of Egyptian temples, such as that which determined the axis of a Christian



A. Great Temple of Ammon, Karnak: Hypostyle Hall



B. Temple of Isis, Philæ: Colonnade in Forecourt



A. TEMPLE OF ISIS, PHILÆ, WITH KIOSK PARTLY SUBMERGED



B. TEMPLE OF ISIS, PHILÆ: ENTRANCE COURT, SHOWING PYLONS

church or a Mahometan mosque, but theories as to orientation with regard to particular stars have been enunciated by Sir Norman Lockyer and others. There were temples at various places along the Nile, but the chief temple groups are at Thebes, the capital of the New Empire (Dynasties XVIII–XXX), which covered a large area on both sides of the Nile, and its site on the eastern bank is now occupied by the villages of Karnak and Luxor. On the western bank lay the Necropolis or Tombs of the Kings and Queens with their mortuary temples.

The **Temple of Khons, Karnak** (B.C. 1200) (pp. 11, 23) may be taken as the usual type characterised by entrance pylons, courts, colonnades, halls, and priests' chambers, all enclosed by a high girdle wall. The entrance, between pylons, or massive sloping towers fronted by obelisks, was approached through an imposing avenue of sphinxes. Then came a large outer court, open to the sky and therefore called "hypæthral," surrounded on three sides by a double colonnade. This in turn led into the hypostyle hall, to which light was admitted by a clear-story, formed by the increased height of the columns of the central aisle. Beyond was the sanctuary, and beyond this again was a small columned hall, and the whole was surrounded by passages and chambers used in connection with the temple service. The temple was protected by a great wall of the same height as the halls themselves, and which therefore, like them, decreased in height towards the sanctuary end.

The **Great Temple of Ammon, Karnak** (B.C. 1550–323) (pp. 11, 24, 27), the grandest of all Egyptian temples, was commenced by Amenemhat about B.C. 2466. It was not built on one complete plan, but owes its size, disposition, and magnificence to the additions of many kings, from the Twelfth Dynasty down to the Ptolemaic period. It occupies a site of 1,200 ft. by 360 ft., and is placed in an immense enclosure along with other temples and a sacred lake, surrounded by a girdle wall of brick 20 ft. to 30 ft. thick, while it was connected by an avenue of sphinxes with the Temple at Luxor. The temple has six pylons, added by successive Pharaohs, and consists of various courts and halls leading to the sanctuary. A great court 330 ft. by 275 ft. gives entrance to the vast hypostyle hall, some 320 ft. by 160 ft. internally, or about three-quarters the area of Notre Dame, Paris. The roof of enormous slabs of stone is supported by 134 columns in sixteen rows; the central avenues are about 80 ft. in height (as compared with 140 ft. at Amiens Cathedral) and have columns, 69 ft. high and 11 ft. 9 ins. in diameter, with capitals of the lotus-blossom type, while, in order to admit light through the clear-story, the side avenues are lower, with columns 42 ft. high and 9 ft. in diameter, the capitals being of the lotus-bud type (p. 24 B F)—a method of clear-story lighting more fully developed during the Gothic period in Europe. The effect produced by this forest of columns is most awe-inspiring; the eye is led from the smaller columns of the side avenues, which gradually vanish into semi-darkness and give an idea of unlimited extent, to the larger columns of the central avenues. Incised inscriptions in colour, which cover the walls, column shafts and architraves, give the origin and history of the temple, the names of the gods to whom it was dedicated, and of the royal personages who contributed to its grandeur. In these ancient hieroglyphics we find the germ of the idea which, centuries later, led in Christian churches to the employment of coloured mosaics and frescoes, stained-glass windows, and sculptured statues to record the incidents of Bible history and the lives of saints and heroes. Thus have the exponents of successive

and diverse religions had recourse to an appeal to the eye for manifesting their authority and for setting their religious tenets before the common people.

The **Temple of Ammon, Luxor** (B.C. 1450) (pp. 11, 34 A), commenced by Amenophis III and dedicated to the Theban triad Ammon, Mut, and Khons, was afterwards added to by Rameses II. In the foreground are ruins of the court of Rameses II, with a colonnade of lotus-bud capitals and a seated colossus of Rameses II, connected by a colonnade 174 ft. long of columns 52 ft. high, with bell capitals, leading into the court of Amenophis III in the distance.

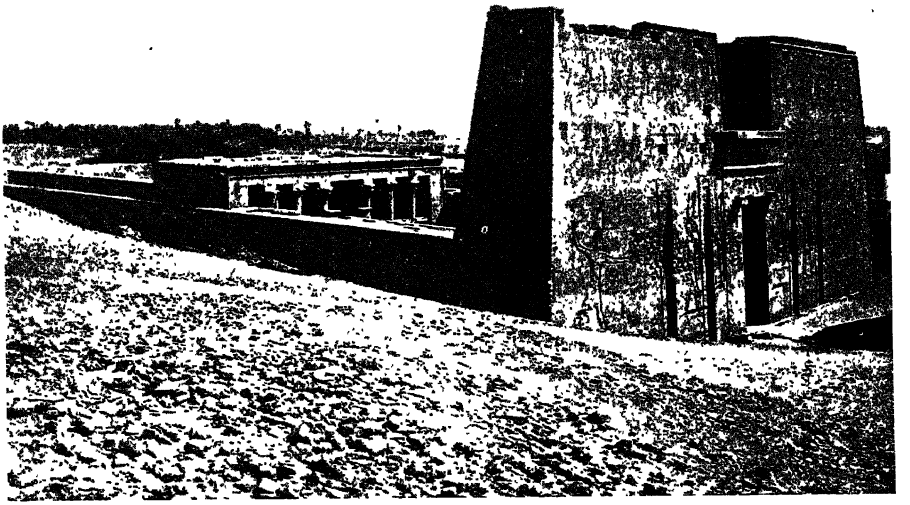
The **Temple of Ammon, Dêr-el-Bahari** (B.C. 1550) (p. 33 A), on the west bank of the Nile at Thebes, was commenced by Queen Hatshepsu, daughter of Thothmes I, but was never completed. The temple is interesting, as it is quite different from all others in Egypt, and consists of three terraced courts stepped out of the rock and connected by inclined planes. The upper court is flanked by the Sacrificial Hall, with a vaulted stone roof, which is very unusual, and a court containing the only ancient Egyptian altar, while on the central axis is the sanctuary, cut deep into the rock. The wall sculptures are especially interesting, as they represent in low relief Egyptian spearmen by the bank of a river indicated by the zigzag band, which is the usual symbol for water (p. 42 A).

The **Temple of Seti I, Abydos** (B.C. 1350), completed by Rameses II (B.C. 1330), has two pylons, two forecourts, and two hypostyle halls, and it is unique in that it has seven sanctuaries, instead of one, arranged side by side, and dedicated to six gods and the deified king; and to each there is a separate gateway and portal. The sanctuaries are roofed with stone slabs in horizontal courses, each course projecting beyond that immediately below, and the undersides are rounded off by the chisel into the form of a vault. This Temple also differs from others in having a wing at right angles to the main structure, because the rising ground made it difficult to continue the building on the same axis. The historical reliefs on the walls of close-grained limestone are amongst the finest in Egypt (p. 42 B).

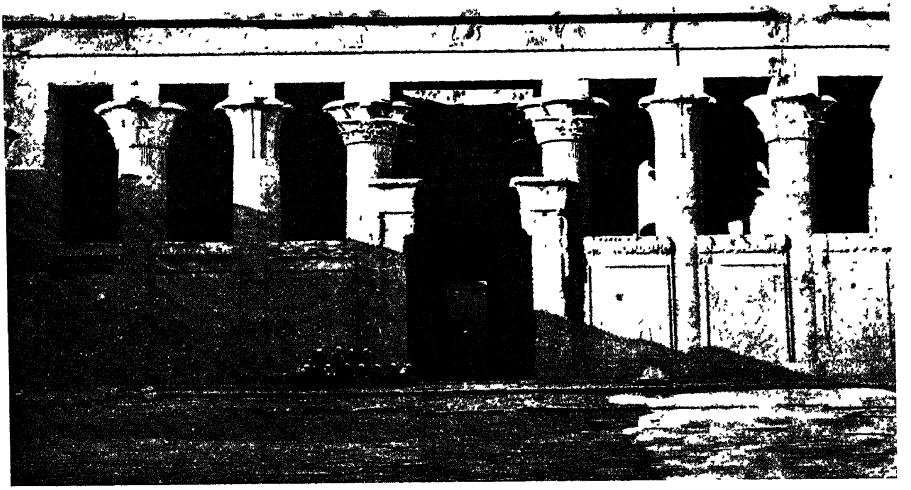
The **Great Temple, Abu-Simbel** (B.C. 1330) (p. 32 A, B), is one of the most stupendous and impressive of all those hewn out of the living rock. The entrance forecourt leads to an imposing façade, 119 ft. wide and 100 ft. high, formed as a pylon carved with four seated colossal statues, over 65 ft. high, of the founder, Rameses II. The vestibule beyond has eight Osiris pillars and vividly coloured wall reliefs. Eight small chambers, probably used for temple utensils and furniture, adjoin this vestibule, and beyond is a small hypostyle hall, 36 ft. by 25 ft., with four pillars. Behind is a long narrow chamber off which is the sanctuary with an altar and four seated figures of deities.

The **Small Temple, Abu-Simbel** (p. 32 C), founded by Rameses II and dedicated to his consort Nefert-ari and Hathor, was hewn out of the rock adjoining the great temple. The façade, 90 ft. wide and 40 ft. high, has six recesses occupied by colossal statues, 33 ft. high, representing Rameses and his consort, separated by buttress-like projections, carved with votive inscriptions. A narrow entrance doorway, surmounted by a representation of Rameses sacrificing to Ammon and Horus, leads through a vestibule to the sanctuary.

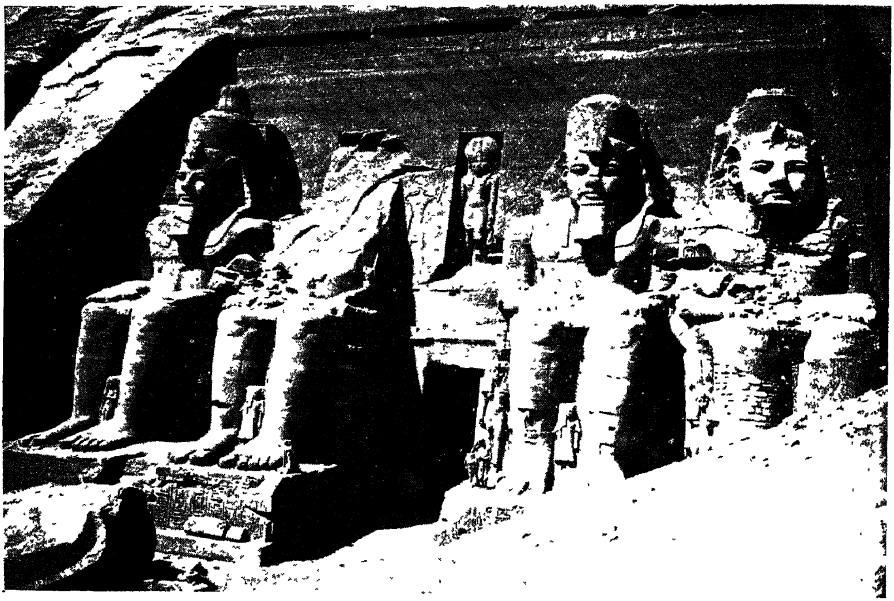
The **Temple, Edfu** (B.C. 237) (p. 31), commenced by Ptolemy III, is the best preserved of this period. A massive pylon, faced with reliefs and inscriptions, gives access to a great court surrounded by a colonnade, and beyond is the great hypostyle hall, with its façade of six columns,



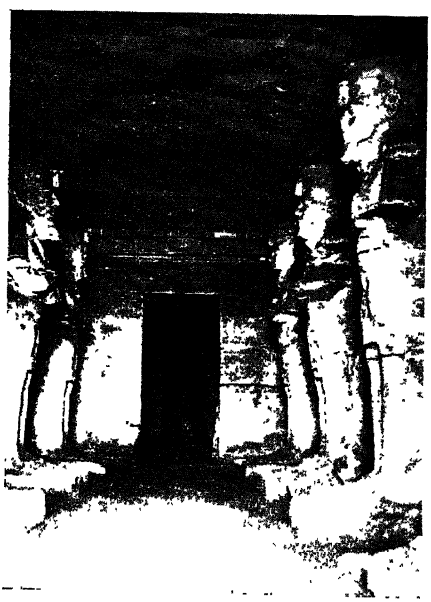
A. Temple at Edfu



B. Temple at Edfu: Portico with Screen between Columns



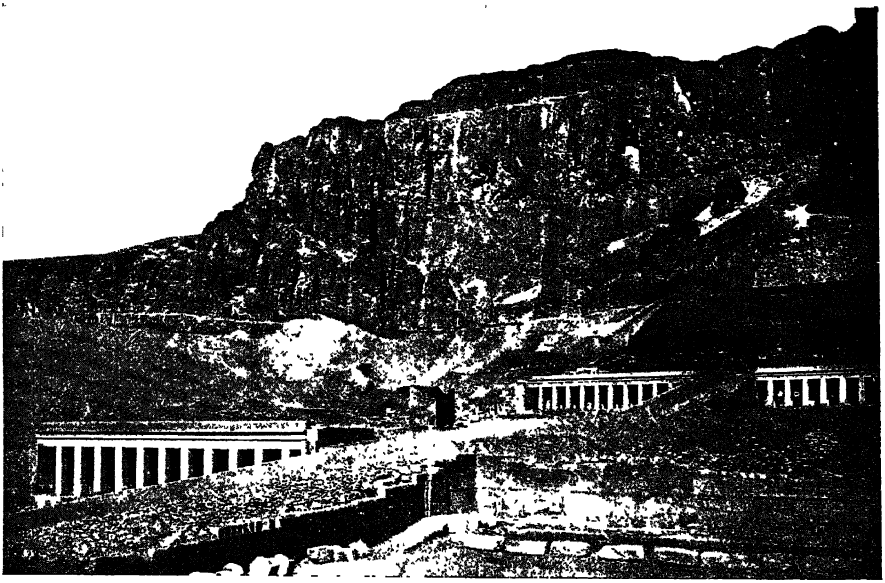
A. Great Temple, Abu Simbel



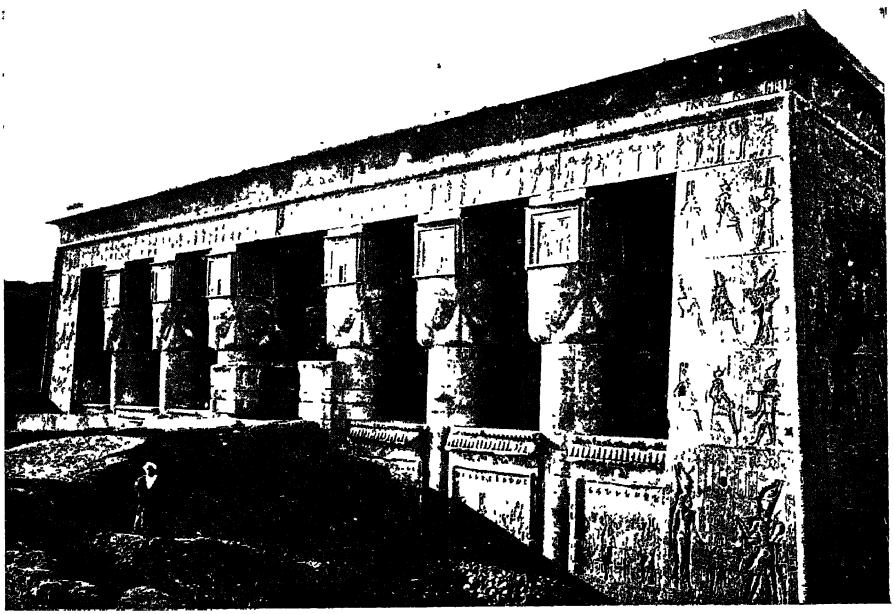
B. Great Temple, Abu Simbel



C Small Temple, Abu Simbel



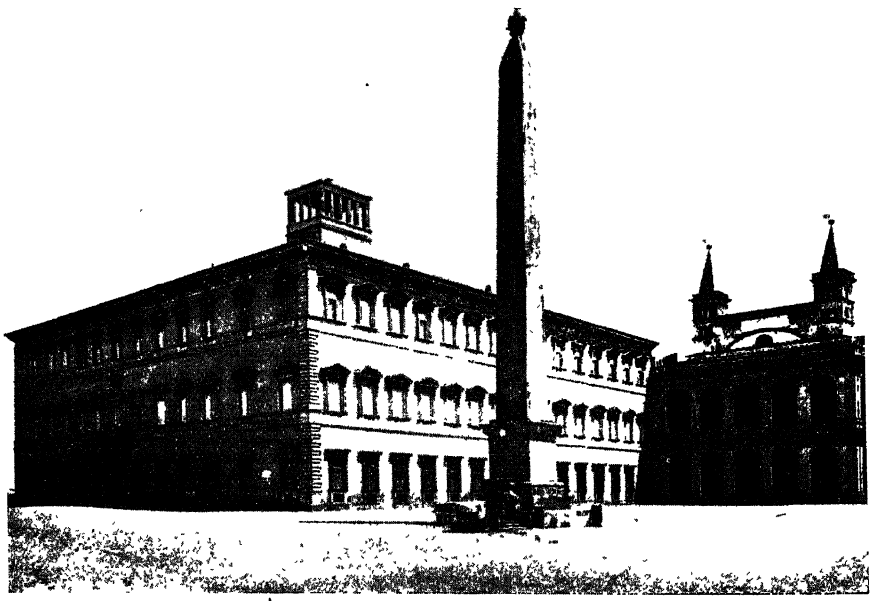
A. Temple of Ammon, Der-el-Bahari



B. Temple of Hathor, Dendera



A. Temple of Ammon, Luxor



B. Obelisk, Piazza of S. John Lateran, Rome

of which the central intercolumniation forms the portal and the narrower spaces between the other columns have low screen walls over which the light is admitted. Twelve columns with elaborate capitals support the roof of the hall, beyond which was a smaller hypostyle hall with twelve columns crowned with Hathor-headed capitals. Behind this again were vestibules, smaller chambers, and last of all the sanctuary.

The **Temple of Isis, Philæ** (pp. 27 B, 28), of the Ptolemaic period (B.C. 332–30), is an example of a type frequently found in Egypt, in which the successive additions are not on the same axial line. The forecourt, entered through massive pylons, 150 ft. broad and 60 ft. high, has on the west the birth house, a small colonnaded temple dedicated to Hathor-Isis, and to the birth of her son, Horus, and on the east is a colonnaded building used by the priests, with columns resting on double bases, and with palm and floral caps of varying design supporting an architrave with votive inscriptions. On the farther side of the court is a second pylon, 105 ft. broad and 40 ft. high, leading to the temple proper, consisting of courts, hypostyle hall, two smaller vestibules, sanctuary, and other chambers, all in nearly total darkness. The walls, both inside and out, are covered with inscriptions. The " Kiosk " (p. 28 A), also known as " Pharaoh's Bed," stands to the east of the main temple and was erected by the Emperors Augustus and Trajan, though never completed. This small temple, with four columns at the ends and five on the flanks, has floral capitals of varying design, surmounted by deep stone blocks intended to be carved with Hathor heads and small shrines, and support an architrave and a typical cornice. This, like the temple, is submerged during a part of the year, and frequently only the upper parts of the columns are visible.

The **Temple of Hathor, Dendera** (p. 33 B), another Ptolemaic example, but not completed till the reign of Augustus, is without pylons, forecourt, or enclosing wall, but has a great vestibule of twenty-four columns, with six on the façade which have low screen walls between them on either side of the central entrance. Then comes the hypostyle hall of six columns with elaborate Hathor-headed capitals, and on either side of this hall and beyond are chambers for various uses, and last of all are two ante-chambers and the sanctuary. The temple roof, used for priestly processions, is reached by staircases on either side.

The **Temple, Elephantine** (B.C. 1450) (p. 23), destroyed in A.D. 1822, was one of the so-called " Mammisi " temples, which consisted of a small chamber known as the birth house and sacred to the mysterious rites of the goddess Isis. This chamber with its statue and altar, surrounded by columns and approached by a flight of steps, is sometimes, though perhaps erroneously, regarded as the prototype of the later Greek temple which was built as a shelter for the god. Similar temples are at Philæ and Dendera.

OBELISKS

The obelisks or monumental pillars, which stood in pairs to dignify temple entrances, are huge monoliths, square on plan and tapering to a pyramidal summit, with a metal capping, and have a height of nine or ten times the diameter at the base, and the four slightly rounded sides are cut with hieroglyphic records still visible. The transport of such large blocks of stone, without steam power, was an extraordinary engineering feat. The granite was probably quarried by the insertion of wooden wedges which expanded after soaking and thus split the granite into blocks. The transport was accomplished on great barges, as depicted in sculptures, and the obelisk was placed

on its foundation by hauling it up a causeway of earth, and then tilting it into position. Many obelisks were removed from Egypt by the Roman Emperors, and there are at least twelve in Rome alone.

The **Obelisk** in the Piazza of S. John Lateran (p. 34 B) was brought to Rome from the Temple of the Sun at Heliopolis, where it was originally erected by Thothmes III, and is the largest in existence. It is a monolith of red granite from Syene, 105 ft. high without the modern pedestal, 9 ft. square at the base and 6 ft. 2 ins. at the top, and weighs about 450 tons.

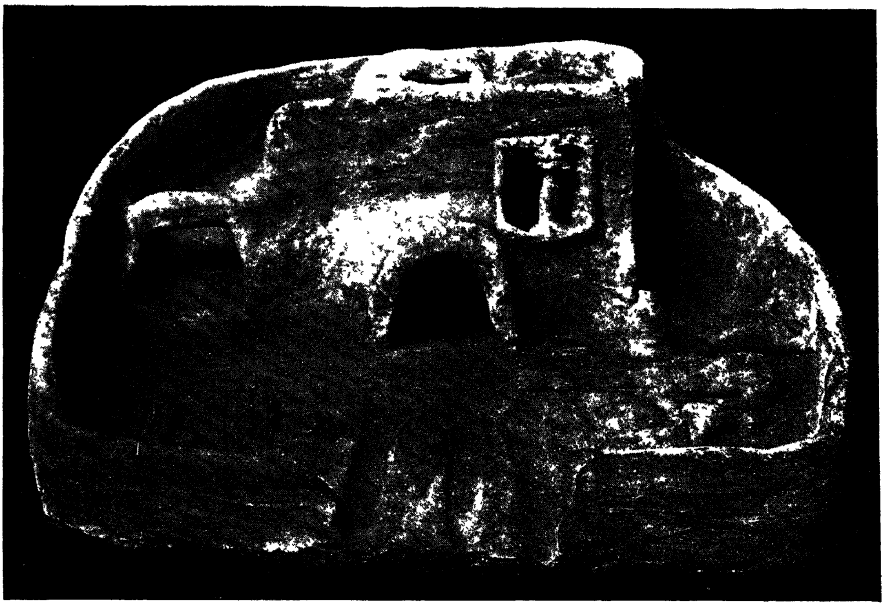
"Cleopatra's Needle," the Obelisk on the Thames Embankment, London, was also originally erected at Heliopolis (B.C. 1500) and was brought to England from Alexandria. It is 68 ft. 6 ins. high, 8 ft. square at the base, and weighs 180 tons.

DWELLINGS

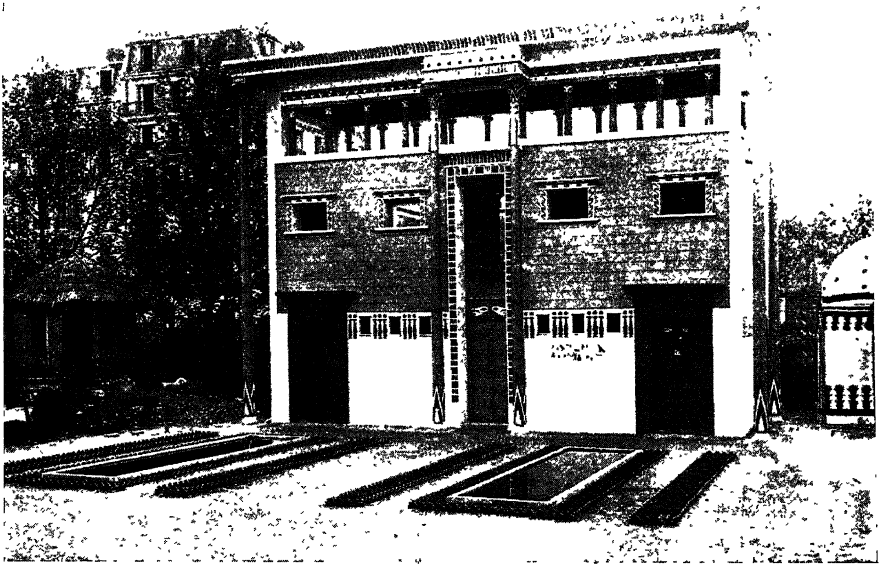
Many houses in crude bricks have been excavated, while others are shown on paintings and sculptures, according to which they appear to have had one, two, or three storeys. We also learn much about the humbler dwellings of Old Egypt from the clay models which have been unearthed and are now in the British Museum and elsewhere. The model (p. 37 A) shows an open yard for household work with rooms behind, while outside steps sometimes wind up to another floor with flat or domed roofs which were formed of puddled clay or sun-baked bricks. The **Egyptian House** (p. 37 B) at the Paris Exhibition, 1889, was constructed by M. Charles Garnier from an ancient painting, and had a garden in front laid out in a formal style, with fish ponds. The house was divided by a corridor in the centre, giving access to the rooms, and a staircase at the back led to a covered roof-loggia over the whole house. The building was brilliantly painted in yellow for the upper part of the house and blue for the tall wooden columns which supported the angles of the "gorge" cornice. The earliest houses in the history of domestic architecture of which remains have been found are those erected for the workmen employed in the building of the Pyramid of Illahun, and deserted on its completion. They varied in size from the single room of the ordinary labourer to the habitations of the chief inspectors, and were built in unburnt brick, with open courts in the larger examples, to give light and air to the rooms around.

4. COMPARATIVE ANALYSIS

A. **Plans.**—The plan of Egyptian temples differs in many respects from the Greek (p. 118). An imposing avenue of sphinxes led to the main entrance, flanked by slender obelisks which formed a strong contrast to the massive pylons. Courts and halls alike were designed to produce an impressive internal effect, and the hypostyle hall, seemingly unlimited in size, crowded with columns and mysteriously illuminated from above, was the grandest achievement of Egyptian planning (pp. 23, 24). The temples frequently consist of a series of additions spread over many centuries, and in this respect they resemble the growth of English cathedrals, as well as in disregard of symmetry in the planning of one part in relation to another. This may be seen particularly in temples erected under the Ptolemies, such as the Temple on the Island of Philæ, where walls, courts, and pylons are on different axes, free from any pretence to regularity, thus producing remarkably picturesque grouping.



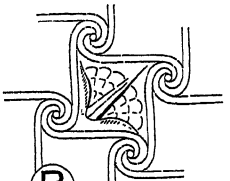
A. Model of Egyptian House (British Museum)



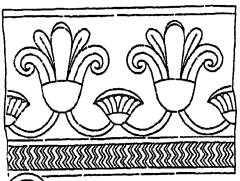
B. An Egyptian House, as erected at the Paris Exhibition, 1889



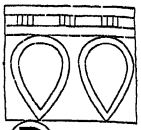
A CONTINUOUS COIL SPIRAL



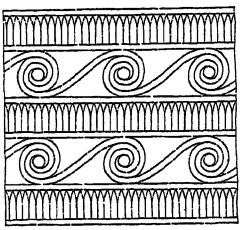
B QUADRUPLE SPIRAL



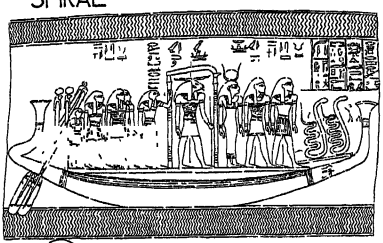
C LOTUS & PAPYRUS



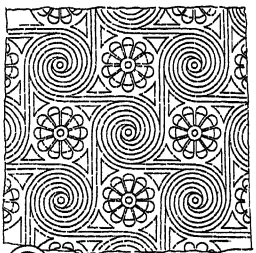
D GRAPE ORNAMENT



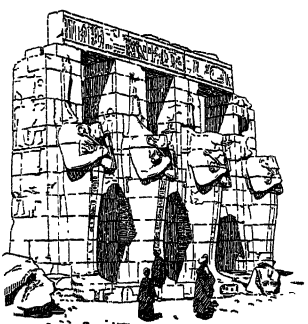
E ROPE & FEATHER ORNAMENT



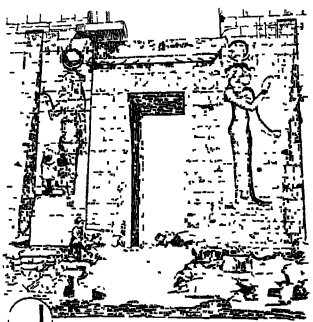
F SACRED BOAT : THEBES



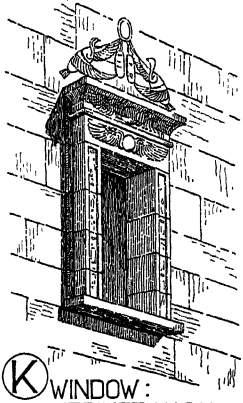
G ROPE & PATERÆ ORNAMENT



H OSIRIS PILLARS RAMESSEUM : THEBES



J DOORWAY IN PYLON, PHILÆ

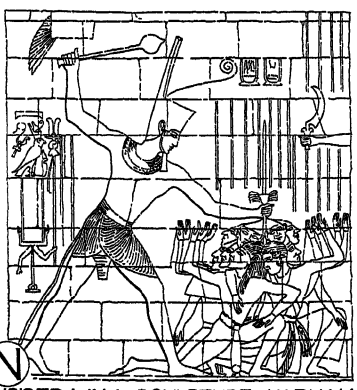


K WINDOW : MEDINET HABU



L WINGED SOLAR DISC.

M GRANITE SPHINX : LOUVRE : PARIS



N INCISED WALL SCULPTURE : KARNAK

B. **Walls.**—Temple walls were immensely thick, of limestone, sandstone, or more rarely of granite. The wall faces slope inwards or batter externally towards the top, giving a massive appearance (p. 31). Authorities trace the origin of this inclination either to the employment of mud for walls of early buildings or because this form of wall was better able to resist earthquakes. Columns, which are the leading external features of Greek architecture, are not used externally in Egyptian buildings, which normally have a massive blank wall crowned with the characteristic "gorge" cornice of roll and hollow moulding (p. 41 J). Walls, even when of granite, were generally carved in low relief, sometimes coated with a thin skin of stucco, about the thickness of a sheet of paper, to receive the colour (p. 40). Simplicity, solidity, and grandeur, obtained by broad masses of unbroken walling, are the chief characteristics of the style.

C. **Openings.**—Colonnades (p. 27) and doorways (pp. 28, 38 J), in a style which was essentially trabeated, were usually square-headed and spanned with massive lintels. Windows are seldom found in temples—a rare example being that at Medînet Habu (p. 38 K)—as light was admitted through clear-story screens in the earlier examples at Thebes, or, in the Ptolemaic and Roman periods, over low dwarf walls between the façade columns, as at Luxor, Edfu (p. 31), Dendera, and Philæ. Pierced stone window-panels of various patterns have been found (p. 24 B) and small slit-openings were also used in roofs and walls to light rooms and staircases (p. 24 D, E).

D. **Roofs.**—These were composed of massive slabs of stone supported by outer walls and closely spaced internal columns (pp. 24, 27, 31 A). Flat roofs of dwelling-houses served as pleasant rendezvous for enjoyment of the fresh breezes which sprang up at sunset, and they may also have been used for repose in the daytime with temporary awnings as protection from the sun. Flat temple roofs were utilised for priestly processions. The arch, although not showing externally, occurs in some of the earliest brick buildings, and also in roofs of the Twelfth Dynasty and in arched store-rooms of the Ramesseum in the Nineteenth Dynasty. Flinders Petrie points out that as mud bricks would be more easily crushed than kiln bricks, a parabolic arch was preferred to a semicircular, the apex of which would have been more likely to yield under pressure. In rock-cut temples ceilings are sometimes chiselled into an arched form, while in the tombs at Beni Hasan the roofing represents timber construction (p. 17 B).

E. **Columns.**—Columns, seldom over six diameters high, often appear in the form of papyrus or lotus stalks tied at intervals by bands (p. 41). The circular shafts curve in towards the base like sheathed stalks and sometimes stand on thick unmoulded bases which in shape somewhat resemble a Dutch cheese. Another form of support were the Osiris pillars used in the mortuary temples at Thebes, the forerunners of the Caryatids of the Greeks, while the 16-sided columns of the Tombs at Beni Hasan are another variety. Capitals mostly follow the forms of the lotus (emblem of Upper Egypt), the papyrus (emblem of Lower Egypt), and the palm, and are as follows: (*a*) The lotus bud, conventionalised (p. 41 J, K). (*b*) The lotus flower, which formed a bell-shaped capital sculptured and ornamented with colours (p. 41 L). (*c*) The papyrus plant (p. 41 B, C). (*d*) The palm capital with painted or sculptured palm leaves (p. 41 R). (*e*) Composite capitals formed of rings of lotus flowers and volutes, held by some to be prototypes of Greek Corinthian capitals (p. 41 N, P). (*f*) Hathor-headed capitals, as at Dendera

and Philæ, formed of heads of the goddess supporting the model of a temple front (p. 41 Q).

F. **Mouldings.**—Mouldings were few, and consisted of the bead or roll-moulding for the angles of buildings, and the hollow, generally used in conjunction with the bead, as the "gorge" moulding to crown the upper part of pylons and walls (p. 41 J). Mouldings were evidently considered to be out of place where walls were relieved by sculptured pictures from base to summit.

G. **Ornament** (p. 38).—This important element in the style was often symbolical, including such features as the solar disc or globe and vulture with outspread wings as a symbol of protection; while diaper patterns, spirals (p. 38 A, B, E, G) and the feather ornament were largely used. The scarab, or sacred beetle used by the Egyptians as a symbol, obtained its sacred character as the emblem of resurrection probably because of its habit of allowing the sun to hatch its eggs in the desert sand. The decoration of temple walls consisted largely of representations of acts of adoration of the monarch to his gods, to whom he ascribed all his success in war. The Egyptians, masters in the use of colour, carried out their schemes of decoration chiefly in blue, red, and yellow. The wall to be decorated was probably prepared as follows: (*a*) the surface was first chiselled smooth and rubbed down; (*b*) the figures or hieroglyphics were then drawn with a red line by an artist and corrected with a black line by the chief artist; (*c*) the sculptor made his carvings in low relief or incised the outline, slightly rounding the enclosed form towards its boundaries; (*d*) a thin skin of stucco was probably applied to receive the colour, and the painter carried out his work in the strong hues of the primary colours. The hieroglyphics (p. 42 B) were sometimes incised direct on the stone or granite and then coloured, as may be seen in the sculptures at the British Museum. They are instructive as well as decorative, and from them is learnt a great deal of what is known of Egyptian history (pp. 38 N, 42). The Egyptians possessed great power of conventionalising natural objects and they took the lotus, palm, and papyrus as motifs for design. These were nature symbols of the fertility given to the country by the overflowing Nile, and as such they continually appear both in construction and ornament.

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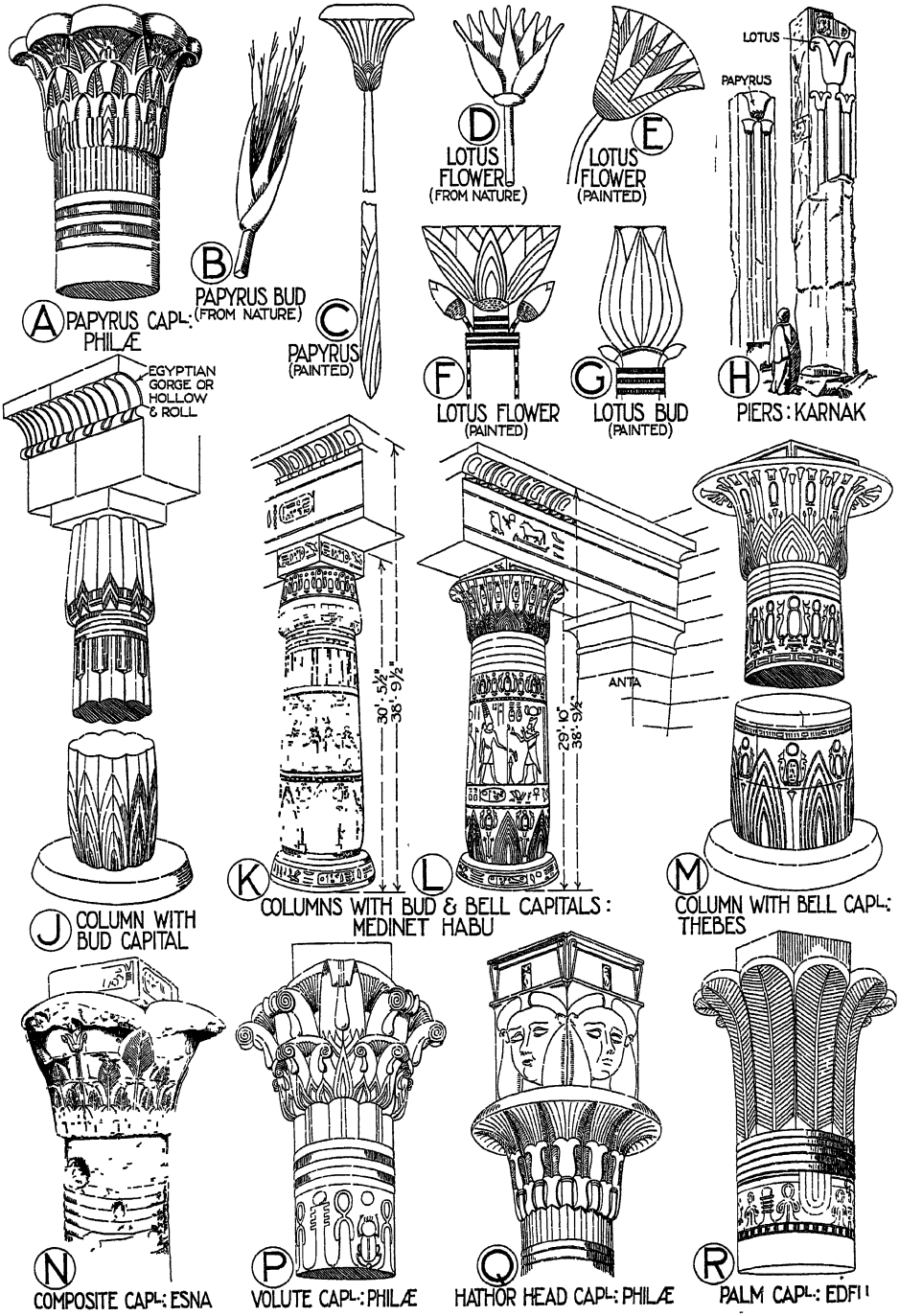
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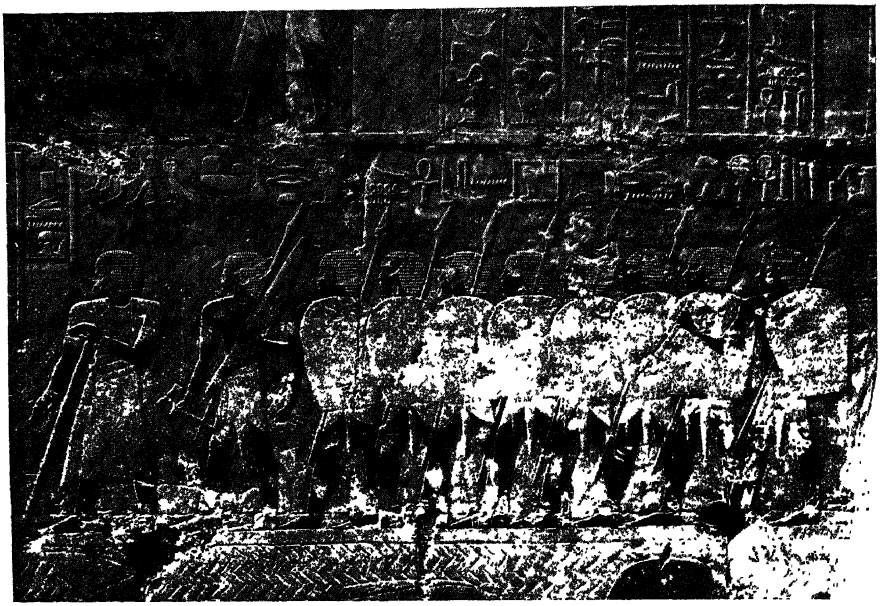
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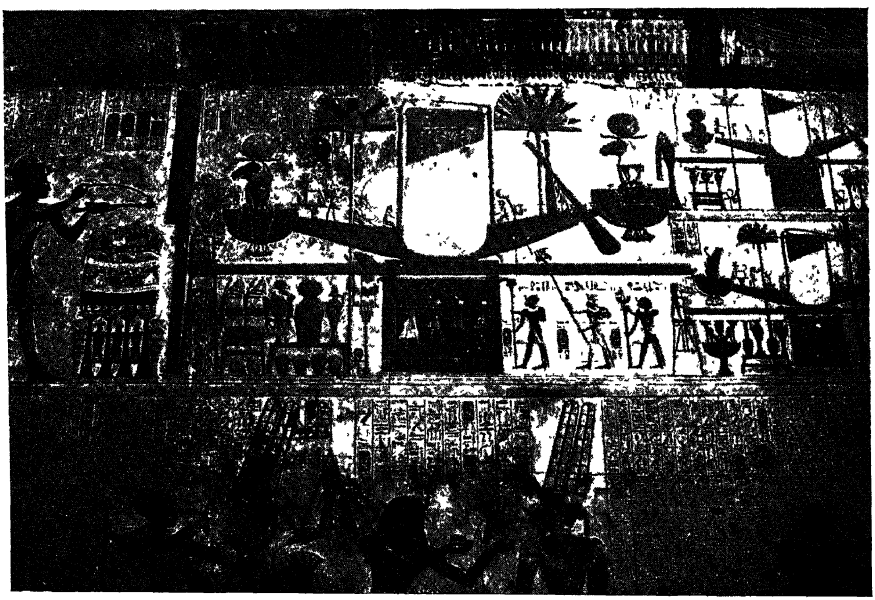
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A PAPYRUS CAPL: PHILÆ
B PAPYRUS BUD (FROM NATURE)
C PAPYRUS (PAINTED)
D LOTUS FLOWER (FROM NATURE)
E LOTUS FLOWER (PAINTED)
LOTUS
PAPYRUS
F LOTUS FLOWER (PAINTED)
G LOTUS BUD (PAINTED)
H PIERS: KARNAK
EGYPTIAN GORGE OR HOLLOW & ROLL
J COLUMN WITH BUD CAPITAL
30'-5½"
38'-9½"
K
L
ANTA
29'-10"
38'-9¼"
COLUMNS WITH BUD & BELL CAPITALS: MEDINET HABU
M COLUMN WITH BELL CAPL: THEBES
N COMPOSITE CAPL: ESNA
P VOLUTE CAPL: PHILÆ
Q HATHOR HEAD CAPL: PHILÆ
R PALM CAPL: EDFU

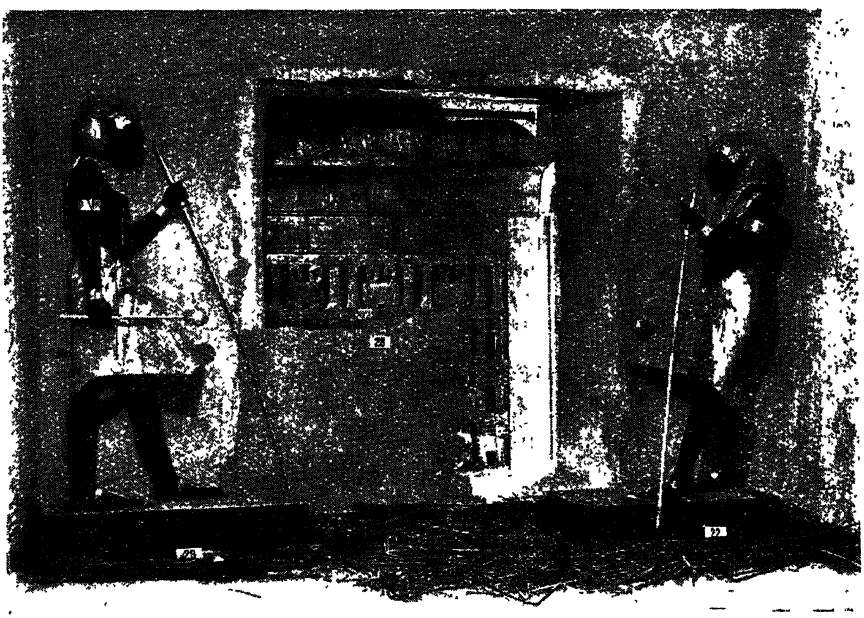


A. Wall Sculptures, Der-el-Bahari

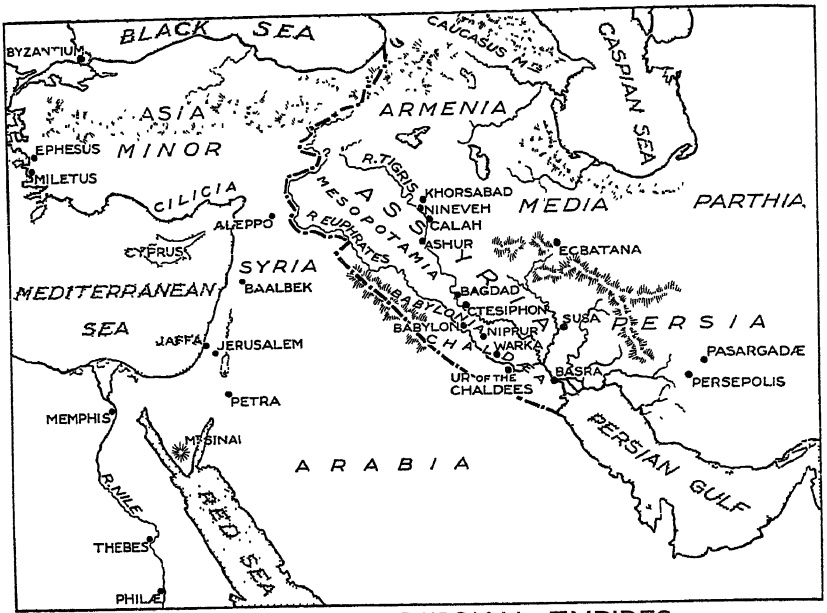


B. Wall Sculptures, Temple of Seti I, Abydos

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TOMB OF TUT-ANKH-AMEN, THEBES:
ENTRANCE TO SEPULCHRAL HALL SHOWING THE SHRINE



ASSYRIAN & PERSIAN EMPIRES

WEST ASIATIC ARCHITECTURE

1. INFLUENCES

i. Geographical.—The earliest civilisation of Western Asia flourished in the fertile plains of the twin rivers, Tigris and Euphrates, and to this district tradition assigns the Garden of Eden and the four rivers of the Book of Genesis. Inundation of the country, with destruction of crops and flocks, was an ever-present danger to the dwellers in the river plains, and this condition is set forth in the account of the building of the Ark by Noah before the time when a system of irrigation gave security to agriculturists. Here, too, in Ur of the Chaldees, was the home of Abraham before he set out on his travels to escape from the constant strife in his own country. Vigorous in its youth and growth, and complete in its decline and decay, this region has been both cradle and tomb of nations and empires. The plain of Mesopotamia (Gk. *mesos* = middle + *potamos* = river) was irrigated by canals from river to river, and thus the land became fertile enough to support the immense populations round Nineveh and Babylon. Geographically speaking, Babylonia and Assyria were one country which ancient writers called Assyria, and in Kings, Book II, Chap. xviii, Sennacherib describes it in glowing terms to the children of Israel as " a land of corn and wine, a land of bread and vineyards, a land of oil, olive, and honey," and all this abundance was the result of elaborate irrigation. But in the thirteenth century the barbarous Tartar invasion finally wiped out this ancient civilisation, with its architectural

glories, its triumphs of irrigation and its agricultural prosperity, and reduced the country, which once blossomed as the rose, to a dismal tract of dreary desert alternating with miasmic marsh. Irrigation has been recently started again, and the Euphrates Dam, completed A.D. 1913, is the great modern wonder of Babylon, designed to restore cultivation to this sterile district, while the Bagdad Railway opens up intercourse with the Western world. Meanwhile the Great War intervened, and once again Mesopotamia became a battle-ground till British supremacy was established, and now the British spirit of enterprise may breathe new life and prosperity into this long-stricken district after peace has succeeded the barren years of devastating war. Just as the pyramids and early monuments of Egypt clustered first round the delta of the Nile, so in Chaldæa the earliest buildings appear to have been at the mouth of the two famous rivers of Western Asia. In Egypt civilisation spread southwards from Memphis to Philæ, whereas in Western Asia it advanced northwards from Babylon to Nineveh, and thus in both countries it followed the natural course, inland from the sea.

On the east of Babylonia and Assyria was ancient Persia, which, under Cyrus and Darius, extended over the high plateau of Iran from the Tigris to the Indus.

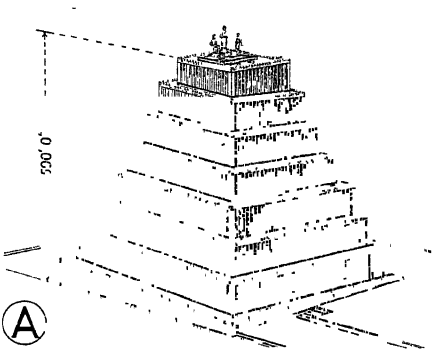
ii. Geological.—Chaldæa or Lower Mesopotamia is an alluvial district of thick mud and clay deposited by the two great rivers, Tigris and Euphrates. Such soil, in which no stone was found and no trees would grow, was eminently suitable for the making of bricks, which thus became the usual building material in Babylonia. The walls were constructed of crude, sun-dried bricks faced with kiln-burnt and glazed bricks of different colours. There were bitumen springs at It on the Euphrates and elsewhere, and in early times hot bitumen or pitch was used as a cementing material, and mortar of calcareous earth in later periods. In Assyria there was plenty of stone in the mountains to the north, but the Assyrians followed the Babylonians in the use of brick ; though they generally faced the walls internally and externally, not with glazed bricks, but with alabaster or limestone slabs carved with low bas-reliefs and inscriptions, which are of great historic importance. In Persia there were hard, coloured limestones which were used in the building of Susa and Persepolis, and roof-timbers were obtained from Elam on the west, while Persian tiles have always been world-famous for their beauty of texture and colour.

iii. Climatic.—Chaldæa was, by reason of its situation round the river deltas, a region of swamps and floods, besides which torrents of rain fell for weeks at a time, and these conditions were aggravated during the long summer by unhealthy, miasmic exhalations and by swarms of aggressive and venomous insects. Therefore elevated platforms, on which to build towns and palaces, were not only desirable, but essential. Assyria, nearer the mountains and farther from the river mouths than Chaldæa, had a similar climate, although with fewer swamps and less miasma, but any climatic difference had little effect on architecture, as the Assyrians followed the Babylonian style. The dry, hot climate of the high table-land of Persia was in striking contrast to the damp of the low-lying plains of Mesopotamia, and it accounts for the innovation of open columned halls in the palaces at Susa and Persepolis. Persia has been described as a country of sunshine, gardens, and deserts, with a climate ranging between extremes of heat and cold. The astronomer-poet of Persia, Omar Khayyám, though writing in

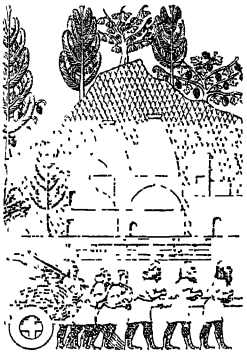
the eleventh century of our era, indicates the national love of beauty as developed under the influence of climatic environment.

iv. Religious.—The polytheism of Babylonia and Assyria was variously expressed, in the worship of heavenly bodies, divisions of the universe, and local deities. The priests, as depositories of Chaldæan wisdom, arrogated to themselves the power of reading the stars, of divination, and of interpreting the will of the gods, and for these astrologer-priests the towering ziggurats were erected. Here, as in Egypt, the system of triads of deities was in force, and among Assyrian gods grouped in triads were Anu, god of heaven, Baal, god of earth, and Ea, god of water—the triad of the universe ; while another triad, Shamash, Sin, and Ishtar, personified the sun, moon, and the life-giving power. There was also a vague tendency to group gods in pairs, while the ethical side is indicated in attributes, such as justice or mercy, given to the various deities. The god, Ashur, in the north was exalted by Assyrians to the chief place in their pantheon, while the same position was accorded in Babylonia to Marduk, but there was a continuous struggle to make Babylon the religious centre with Marduk as chief god. Omen tablets and texts survive from about B.C. 3800 and to them we owe our knowledge of Babylonian methods of divination. Superstition and symbolism everywhere prevailed and it is evidenced in the man-headed bulls, placed as beneficent genii at palace entrances to ward off evil spirits. The Assyrians, in striking contrast to the Egyptians, were not great tomb-builders, as they had not the same strong belief in a future life. The primitive religion of Persia, which betrays the influence of Babylon and became incorporated in the religion of Zoroaster as far back as B.C. 1000, was a system of ethical forces and represented good and evil at war from the beginning of time. The two protagonists were Ormazd, the creator of good, with his supporting gods, of whom Mithras became the most famous, and opposed to Ormazd was Ahriman, the destructive spirit, or power of evil. There appears to have been a tendency towards monotheism and to a belief in the final triumph of good. Fire was held by Zoroaster to be the manifestation of good, and fire worship needed no temples, but only altars for the sacrificial flame, and thus in Persia we must not look for temple remains, nor expect religion to have exercised much influence on architecture.

v. Social.—In Babylon a powerful priestly class arrogated to itself all the learning known as "Chaldæan wisdom," and "medicine men" or physicians were included in the priestly ranks. The Babylonians, settling at the mouth of the Euphrates, were traders in origin and traders they remained, and they employed slaves, not only for the building of palaces and their platforms, but also for that wonderful system of irrigation, and for the agriculture that was dependent on it, while in commerce they had hired men for transport trade by caravans and canals. Cuneiform or wedge-shaped characters on clay tablets or cylinders have proved more lasting than the Egyptian records on perishable papyrus, and among them are accounts of the proceedings in Babylonian law courts and endless business documents. The deciphering of the Babylonian "Code of Laws" of Khammurabi (c. B.C. 2250) has supplied a wonderful insight into habits, customs, and private life from the earliest times : the family idea prevailed, women were free and respected, cities had rights and charters, there were feudal holdings, a system of police, and even a postal service. This "code" gives amazing pictures of an elaborate legal system, complete commercial life, landlord's responsibilities, and city dues. The people were divided into

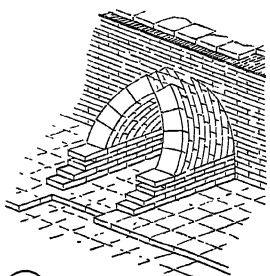


A CHALDÆAN SINGLE RAMP TEMPLE

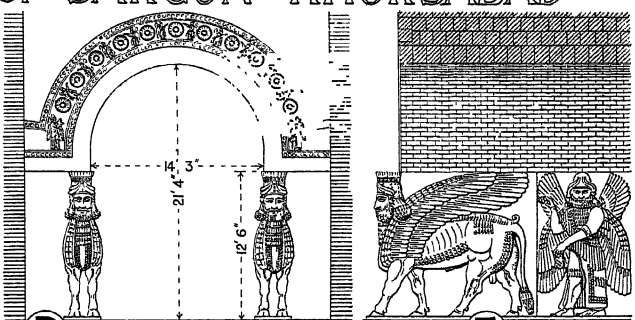


B WALL SLAB: KOUYUNJIK

PALACE OF SARGON: KHORSABAD

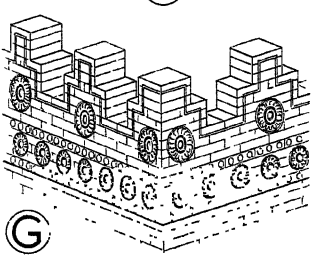


C DRAIN UNDER PALACE PLATFORM

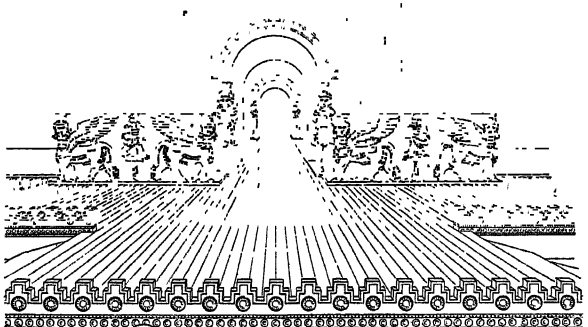


D ELEVATION STATE ENTRANCE E SECTION

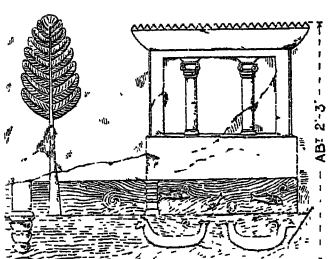




G ENLARGED VIEW OF ANGLE

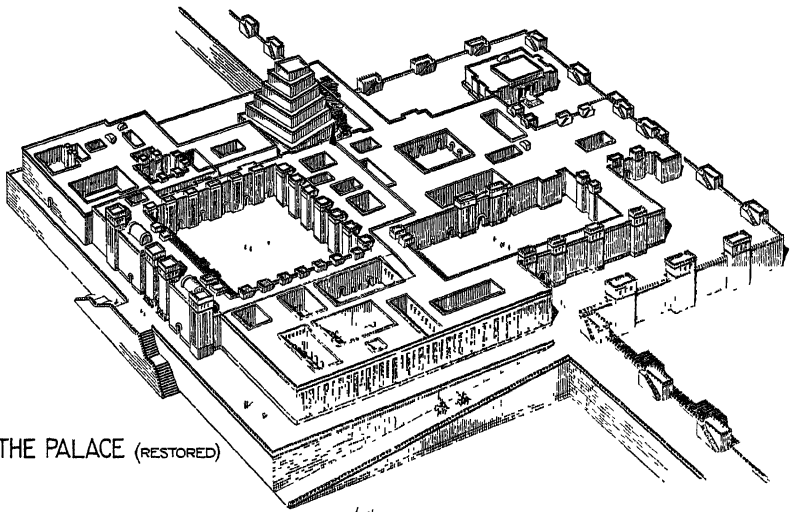


F SOUTH-EAST GATEWAY

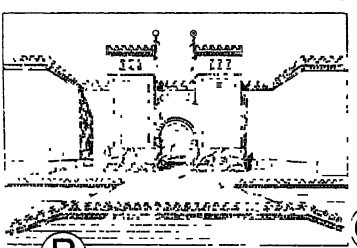


H BAS RELIEF · KHORSABAD

PALACE OF SARGON: KHORSABAD



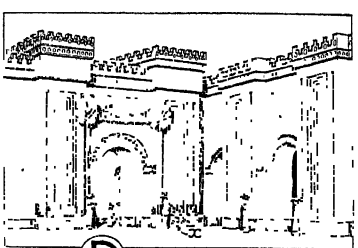
A THE PALACE (RESTORED)



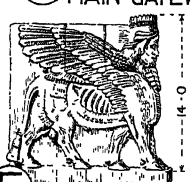
B MAIN GATEWAY



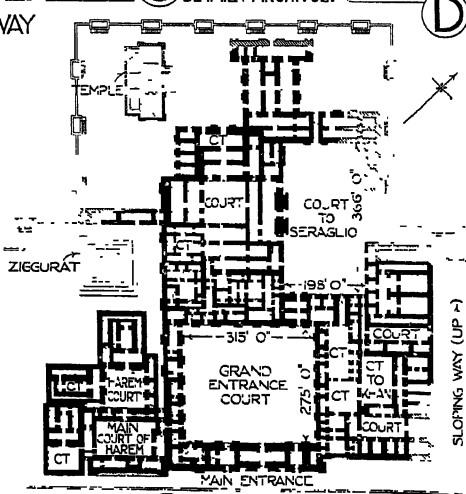
C DETAIL ♀ ARCHIVOLT



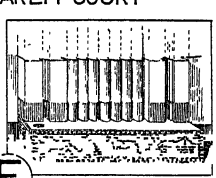
D HAREM COURT



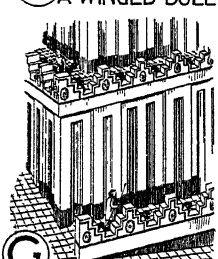
E A WINGED BULL



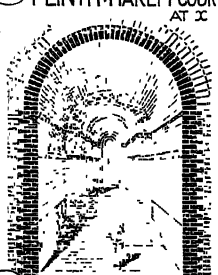
H PLAN



F PLINTH: HAREM COURT AT X



G ANGLE OF ZIGGURAT



J CHAMBER ♀ HAREM

nobles with hereditary estates, a landless class of freemen, and lastly slaves—a social system not only Mediæval, but almost modern in some aspects.

In Assyria a military autocracy with a conscript army was the dominating class, and Assyrians were fighters and sportsmen rather than traders. Irrigation and agriculture also occupied the Assyrians, and they built palaces on raised platforms by the work of captive slaves. Rawlinson calculated that 10,000 men worked for twelve years on the platform of Kouyunjik (Nineveh). Assyrian wall sculptures portray social conditions and form an illustrated history of the battles and exploits of monarchs; there is little reference to religion, with its sacrificial rites, on the delicately incised slabs, which are devoted to war and the chase, and the trail of cruelty is over them all. The social economy of these ancient civilisations included carpenters, masons, smiths, makers of musical instruments, engineers, scientists, mathematicians, poets, and musicians. Houses were doubtless of the primitive form still prevailing in the East, and wall tablets depict the simplest furniture in the way of chairs, couches, and tables.

The Persian domination was due to the military superiority of this hardy, upland race, which gradually imposed Persian civilisation on Western Asia under the rule of the Satraps. They were soldiers all; landowners as horsemen, and people as infantry. The traditions were now modified by Egyptian and Greek craftsmen who migrated to this new world-empire, of which Babylon continued the winter residence of the Kings; while Sûsa was the capital, because Persepolis was too remote for government. The erection of royal palaces gave ample opportunity for the development of Persian architecture and decorative art.

vi. Historical.—There are three main periods of West Asiatic architecture:

(*a*) Babylonian period (c. B.C. 4000–1275). An early Sumerian king, Eannatum, seems to have brought about the first union of Babylonian cities, while the earliest Babylonian king of whom we hear is Sargon of Akkad (c. B.C. 3800), but little is known till about B.C. 2500, when rivalry existed between cities, until the great king Khammurabi in B.C. 2250 established the domination of Babylon, and formulated his "Code of Laws." The Babylonian power declined later under the attacks of Hittites and Kassites, until in B.C. 1700 Assyria became a separate kingdom.

(*b*) Assyrian period (B.C. 1275–538). The Assyrians next conquered Babylonia in B.C. 1275, and remained the great military power of Western Asia until the destruction of Nineveh about B.C. 606. Kings, like Tiglath-Pileser I (B.C. 1100) carried on campaigns to the north-west, and in northern Syria. Ashur-nasir-pal (B.C. 885–860) waged war on every side, and removed the government from Ashur to Calah (Nimroud), where he built a palace and patronised art. His son Shalmaneser II (B.C. 860–825) made himself master of Western Asia from Media to the Mediterranean, and from Armenia to the Persian Gulf, and then the Assyrians first came into conflict with the Israelites. It was during the campaign mentioned in 1 Kings xix. that Jehu, King of Israel, sent tribute to the King of Assyria. Tiglath-Pileser III (B.C. 745–727), referred to in 2 Kings xv. as Pul, extended his empire to the borders of Egypt and, as ally of Ahaz, King of Judah, made Hoshea, King of Israel, his vassal. Sargon (B.C. 722–705), most famous of Assyrian kings, was the first to defeat the army of the Egyptians, and like many a conqueror, ancient and modern, he was also a great builder, as is testified by his magnificent palace at Khorsabad (p. 54), and by his buildings at Calah and Nineveh.

Sennacherib (B.C. 705–681), the famous son of Sargon, invaded Syria, defeated the Egyptian army, entered Judæa, laid siege to Jerusalem and forced King Hezekiah to pay tribute taken from the treasure of the Temple. In 2 Kings xix. there is a graphic record of the destruction of Sennacherib's army, probably by the plague, during his second campaign in Palestine. We read that the "Angel of the Lord went out and smote in the camp of the Assyrians . . . and behold they were all dead corpses." A wiser and a sadder man, King Sennacherib retreated to wage wars nearer home, and having destroyed Babylon in B.C. 689, and defeated the Greeks in Cilicia, he settled in Nineveh to worship his gods and to build a mighty palace, and was there assassinated by his sons. Esarhaddon, his son (B.C. 681–668), fought against Arabs and Medes, invaded Phœnicia, Edom, and Cilicia, and conquered Lower Egypt in B.C. 672. He too built great palaces at Calah (Nimroud) and Nineveh, and also temples to the gods. Ashur-bani-pal (B.C. 668–626) fought three campaigns in Egypt and sacked Thebes (B.C. 666). He extended the boundaries of his kingdom on the north and south, and the records of his last campaign were sculptured on the wall slabs of his palace at Nineveh, which are now in the British Museum. The Empire was then at the height of its power, but in B.C. 634, with the incursions of the Medes, decline set in until in B.C. 606 Nineveh was captured and destroyed, and the Assyrian Empire divided. The new Babylonian Empire only lasted for seventy years. Nebuchadnezzar II (B.C. 605–562) is famous for the destruction of Jerusalem and for the Babylonian captivity (B.C. 597–538), and is lastingly associated with the wonders of Babylon, its palaces, hanging gardens, and towered walls. After a short series of weak rulers Babylon itself, under Belshazzar, to whom the prophet Daniel interpreted the writing on the wall (Dan. v.), was captured by the Persian King Cyrus in B.C. 538.

(*c*) Persian period (B.C. 538–333). The domination of Persia over Western Asia, and her struggles for a further extension of power, record her contact with Greece and Egypt. After the capture of Babylon (B.C. 538), Cyrus made war on Crœsus, King of Lydia, and then the Greek colonists in Asia Minor fell under the rule of Persia. Cambyses (B.C. 529–521), his son, extended the Persian conquests to Egypt, and there seems no doubt that the impression produced by the marvellous buildings of Memphis and Thebes caused the introduction of the column into Persian architecture, though in the somewhat grotesque form seen in the halls of Susa and Persepolis. Next came Darius (B.C. 521–485), who carried Persian arms into Europe as far as the Danube. He also hankered after Greece, and in B.C. 494 captured Miletus, destroying the famous Ionic temple (p. 102). He defeated the allied Greeks at Ephesus, but was himself defeated at Marathon (B.C. 490). Xerxes (B.C. 485–465), who pursued the same ambition, met with defeat by the Greeks, not only in the sea battle of Salamis (B.C. 480), but also in the land battle at Platæa (B.C. 479). Under Alexander the Great (B.C. 333–323) Western Asia became a Greek province. Persia, however, after Alexander's death, passed under the Seleucid (B.C. 312–280) and Sassanian (A.D. 226–642) dynasties, and after the Arab conquest in A.D. 642 there arose various Perso-Mahometan dynasties which made Bagdad a new capital of great magnificence. All this intercourse and intermingling of nations and races, which in the earliest times was generally warlike in character, naturally had its effect in an intermingling of architectural features in the different countries (pp. 58, 832).

2. ARCHITECTURAL CHARACTER

The ancient architecture of Western Asia of the historical period was being developed from about B.C. 4000 to the conquest of the country by Alexander the Great in the fourth century before Christ.

In the alluvial plains of the Tigris and Euphrates, stone and timber suitable for building were rare. There was, however, abundance of clay which, compressed in moulds and dried in the sun, was the material used for the palace platforms, which were faced with either sun-dried or kiln-burnt bricks. The Babylonians clothed their walls with a coat of glazed brickwork of many colours, whereas the Assyrians generally used slabs of glowing alabaster, on which they displayed those delicate carvings which are not only prized for their artistic qualities, but also give much valuable information. In both cases rough brickwork formed the core to which ornament was applied, in the same way that walls are covered with tapestry hangings. A form of wall ornament at Khorsabad was obtained by the constant repetition of half-columns or gigantic reedings, like half-tree trunks standing side by side, and it is tempting to refer this to a tree origin, were it not for the scarcity of timber in Babylonia and Assyria (p. 48 F). The arch, formed by corbelled horizontal courses or with radiating voussoirs (p. 48 C), was probably hit upon accidentally, and it may indeed be assumed that the arch was first resorted to by builders who, like the Chaldæans, were compelled to employ small units of materials, such as bricks, because, unlike that of Egypt and Greece, the local geological formation did not supply stone in blocks of sufficient size to span wide openings. Arches therefore, whether used for vaulted drains under the platforms, or for palace entrances, were important features (p. 47 D). Columns were not used, for want of suitable stone, and indeed neither Babylonians nor Assyrians used stone constructively as did Egyptians, Persians, Greeks, and Romans. The imposing effect produced by towering masses of palace buildings and stepped ziggurats, planted on great platforms and approached by broad stairways and ramps from the plains below, must be left to the imagination ; but we can see, in the British Museum, not only colossal winged bulls that once flanked a palace portal, but also carved alabaster slabs which paved an audience chamber, and sculptured bas-reliefs from palace walls (p. 62).

Persia inherited many architectural forms from Assyria, and also borrowed some from Egypt and Asiatic Greece. Stone, which was abundant in the rocky upland country, was used in the many-columned palaces of Susa and Persepolis, and the ornate stone capitals may have been elaborated from a primitive wooden post and bracket supporting a cross beam (p. 56 B, D). These Persian palaces seem to have rivalled all that preceded them ; and they were the outcome of that love of beauty and luxurious surroundings that have been imaged in the later verses of Omar Khayyám. The glamour of mystery lies over these vanished palaces, but we can partly reconstruct them in imagination, for, though the bricks have returned to the mud whence they came, we know something of the stone columns, window architraves, and monumental entrances of those light and airy palaces. We know too how the lovely Persian rose had its place in delicate floral design, while the gleaming blues and greens of antique Persian wall tiles make us realise indeed that " a thing of beauty is a joy for ever." Little was known of West Asiatic architecture till the nineteenth century, when excavations by Botta, Place, Layard, Rawlinson and others gave an idea of their extent and character.

In Asia Minor there are remains of stone monuments of uncertain date with clear indications of a timber origin, both in design and detail. This is specially true of the two Lycian tombs in the British Museum (p. 118), one of which has a double podium supporting a sarcophagus with an arched roof, and here the stonework faithfully reproduces notched beams, tightening wedges and rafter ends of timber, and indeed a timber origin seems more likely in this fertile land than it would be in the alluvial swamps of Babylonia or of Assyria. A study of these Lycian tombs suggests afresh that aspect of architectural character in relation to nature forms which has already been traced in considering the temples of Egypt (p. 21). There are also various theories as to the influence of timber forms on Greek architecture, and it is significant that the reproduction of timber forms in stone was practised by the Bactrian Greeks in India in the second century B.C. (p. 789). Timber may then have been the original material in general use for primitive buildings, but it soon gave way to the more durable stone, and the nature of this material eventually governed architectural character.

3. EXAMPLES

West Asiatic Architecture has been divided into three periods :
The Babylonian (Chaldæan) period (c. B.C. 4000–1275).
The Assyrian period (B.C. 1275–538).
The Persian period (B.C. 538–333).

THE BABYLONIAN PERIOD

Temples of the Babylonian period, of which such surprising discoveries have recently been made—as of the plans of the Temples of Marduk and Ashur on the sites of ancient Babylon and Ashur—seem to have formed the centre, not only of religious, but of commercial and social life, and to have served as granaries, storehouses, and even as money banks. We must exercise imagination as to their appearance, as none exist ; but the " Code " of Khammurabi tells us that numerous officials and vestal virgins were attached to them. Remarkable pyramidal towers, known as ziggurats (holy mountains) were also erected (pp. 47 A, 48 A, H, 55 A). from the summit of which the powerful class of astrologer-priests observed the heavenly bodies and formulated their prognostications. Traces of ziggurats, which were of different types, have been found on most of the Chaldæan city sites, such as Mugheir (Ur of the Chaldees), Nippur, Tello (Eninnu), and Warka (Erech), and it is noticeable that, whereas in the pyramids the sides were oriented, in the ziggurats the angles faced the cardinal points.

The **Ziggurat, Birs-Nimroud** (Borsippa), rebuilt by Nebuchadnezzar, when excavated by Sir Henry Rawlinson was in a sufficiently recognisable condition to be described as typical of others. It stood 272 ft. square, and was 160 ft. high, crowned with a temple shrine to the god Nebo. Four receding stories have been traced, round which a sloping terrace reached the top, but a cylinder record on the site shows that there had been seven storeys glowing in glazed bricks of seven different colours and dedicated to the seven heavenly planets. We cannot fail to connect these Babylonian ziggurats with the Bible story of the building of the Tower of Babel. It is recorded in Genesis xi. 4 that the " children of men " attempted to build a tower which should " reach to heaven," and it is worth noting that in Egypt and Western Asia, both remarkable for their monotonous level

stretches of country, man should have sought to break the sameness of the landscape by massive pyramids and terraced towers.

The **Tomb of Prince Meṣ-kalam-dug** (B.C. 3500) at **Ur** of the Chaldees, discovered A.D. 1927, with many art treasures, sheds new light on this period.

The **City of Babylon** (Babel = the gate of god) became the capital of the Empire about B.C. 2000, and was as amazing in size as in construction ; for, according to Herodotus, it occupied an area of 200 square miles—an estimate which may well be exaggerated. An idea of its splendour may be obtained by the fanciful restoration, p. 64. The excavations of Professor L. W. King have revealed parts of the older city which indicate that, as early as B.C. 2000, there was a system of town-planning. Streets running parallel to the river were crossed by others at right angles, being as carefully laid out as anything in the city of New York. Towers were outstanding architectural features, and Babylon is said to have had 250 towers besides 100 bronze gates in its immense encircling city walls, on whose lofty crest, 300 ft. high, it is asserted that a four-horse chariot could turn. Temples were of vast dimensions, and greatest of all was the Temple of Marduk (Baal), the city god, adjacent to a great terraced tower often assumed to be the Tower of Babel. Old Herodotus states that Babylon had its *via sacra* spanned by the Gate of Ishtar. The houses were three or four storeys high, while the magnificence of the Palace of Nebuchadnezzar has passed into fame, chiefly by reason of its so-called " hanging gardens," which have fascinated succeeding generations by giving a Peter-Pan touch of fairydom to this ancient city. These gardens were probably raised on supporting arches, some 75 ft. high, and thus broke the monotony of the featureless, level country. The wonder of these flowering gardens was increased by the engineering skill which, according to Strabo, raised water to fertilise them by a screw pump from the Euphrates below. The great wonder-city of Babylon was doomed to destruction, and it became a quarry for the building of other towns, such as Ctesiphon and Bagdad. It had its day of pomp and power, and its name has passed into a by-word by reason of the vice and luxury which are chronicled as preceding its downfall. Whatever may have been the moral issues involved, it is quite evident from a material point of view that the mud bricks of which the whole city was built could not—like enduring stone —resist attacks of enemies, ravages of fire, or decaying influences of time and weather, and thus Babylon returned to the mud of which it was built, and only mounds now indicate its ancient site. Legends are woven round the country where the cradle of man has been located ; history emerges vaguely from chronicles, and archæology has only recently begun to elucidate the truth about the early days of man in Mesopotamia ; but the wonders of Babylon have ever held their own with the Tower of Babel. Both have been at times almost relegated to the region of myths, but excavation and investigation have shown the reason for the Tower and the reality of Babylon.

THE ASSYRIAN PERIOD

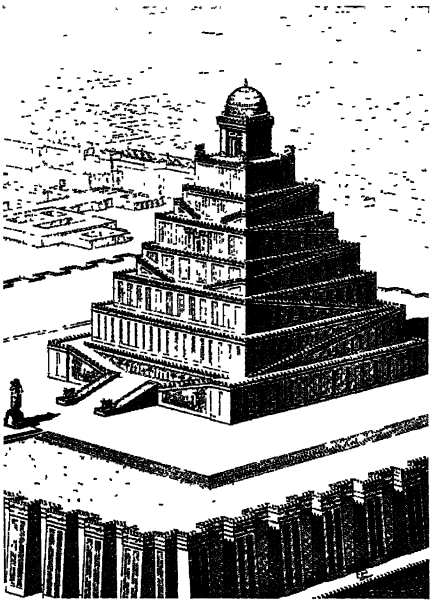
Palaces of warrior-kings were the chief buildings of Assyria, while temples sink in importance compared with these great palaces.

Nineveh (Kouyunjik), the capital, 250 miles north of Babylon, has remains of three palaces built by Sennacherib (B.C. 705–681), Esarhaddon (B.C. 681–668), and Ashur-bani-pal (B.C. 668–626). They were discovered by Botta (A.D. 1842) and Layard (A.D. 1845), and the bas-reliefs in the British

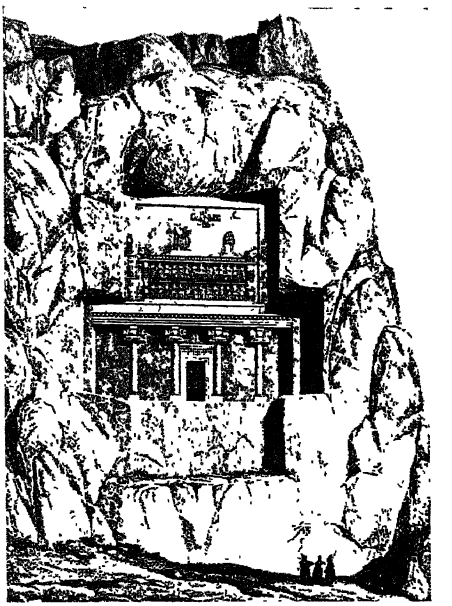
Museum show not only warlike pursuits, but building operations, while some still bear traces of the action of the fire which destroyed Nineveh in B.C. 609 (pp. 47 B, 62 J).

Nimroud (Calah), the foundation of which is recorded in Gen. x. 11, twenty miles south of Nineveh, had a palace built by Ashur-nasir-pal (B.C. 885–860), from which there are remarkable wall slabs in the British Museum (p. 62 A, E, F, G, H), another by Shalmaneser II (B.C. 860–825), and yet another by Esarhaddon, who had built a more splendid palace at Nineveh. All these were explored by Layard in A.D. 1845, and latterly by Dr. Andræa.

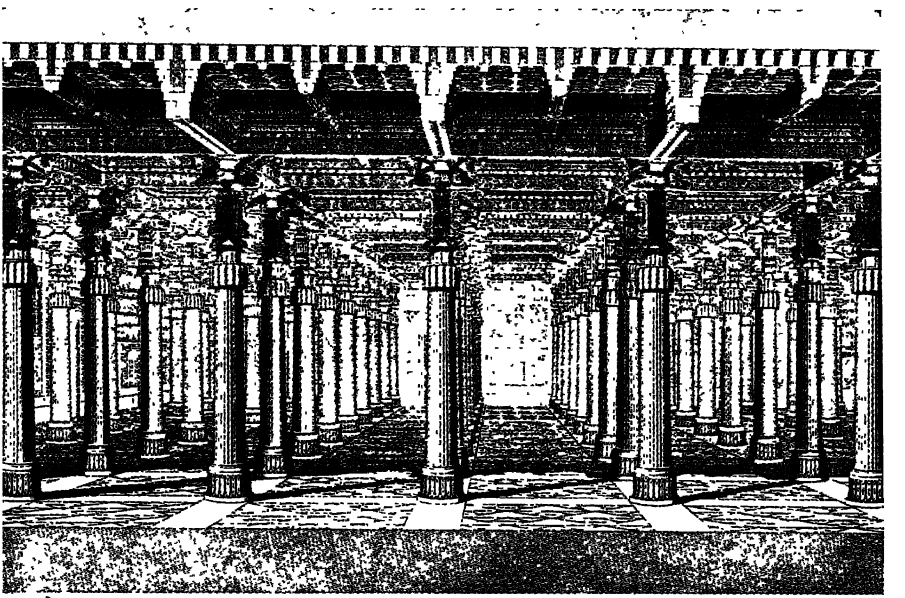
The **Palace of Sargon, Khorsabad** (B.C. 722–705) (pp. 47, 48), ten miles north-east of Nineveh, excavated in A.D. 1864 by Place, provides the best idea of Assyrian palaces. It covers the greatest area of any so far explored; for, with its various courts, chambers, and corridors, it appears to have occupied 25 acres and to have contained some 700 rooms. Like all Assyrian palaces it stood some 50 ft. above the plain, on a platform of sun-dried bricks faced with stone, and was reached by broad stairways and sloping ramps for horses and chariots. The three entrance portals to the principal court were flanked with great towers and guarded by man-headed winged bulls or lions 12 ft. 6 ins. high, which supported a bold semicircular arch decorated with brilliantly coloured glazed bricks. From these massive monsters, which are now in the British Museum, it would seem that the most impressive creations of Assyrian architecture were concentrated on the palace portals, not only to inspire awe and wonder in the beholder, but to ward off the approach of evil. The palace had three distinct groups of apartments corresponding to the usual divisions of palatial residences in modern Persia, Turkey, or India, viz.: (i) the Seraglio or palace proper, which included the king's residence, state halls, men's apartments, and reception rooms, with ten courts, sixty rooms, and numerous corridors; (ii) the Harem with the private family apartments; and (iii) the Khan or service chambers, all arranged round the principal court of about 2½ acres. In the state rooms a sculptured and perhaps coloured dado of alabaster, 9 ft. high, lined the lower portion of the walls, above which they were probably left plain. There was also the usual temple obsérvatory or ziggurat on the west side of the platform. We conclude that, as in Egypt, sufficient light reached the interiors without the use of windows; for none have been discovered, nor are they shown on bas-reliefs except in towers, but numerous terra-cotta pipes have been found which were probably inserted in domes, vaults, and walls to admit light and air, as they still are in the East. The method of roofing was formerly much in dispute, due to the objective association which assigned to Assyria the trabeated construction of Egypt. It will, however, be seen from the plan (p. 48 H) that only open courts are planned in squares, while covered-in-rooms are long and narrow. Further, the immense thickness of walls (28 ft.) was more than was required to keep out even the heat of the Assyrian plains, and this strength was probably designed to support not timbers, but a heavy vaulted roof—a roof indeed of the same shape and structure as has been found in the drains and water channels under the platforms, as well as in the entrance arches of palaces and city gates. So far for hypothesis; but now there come the discoveries by Place of huge blocks of compressed clay with stucco-covered soffits, which would seem to have fallen from above and would definitely suggest and enforce the conclusion that they were fragments of a roof vaulting, and that these narrow



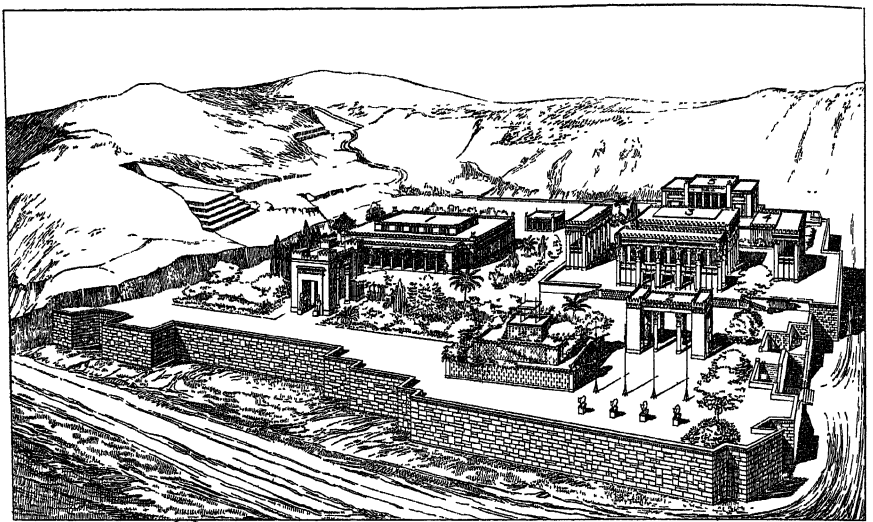
A. Chaldæan Double-ramp Temple



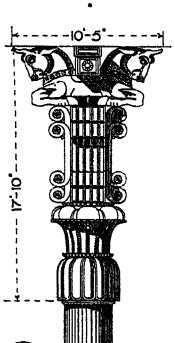
B. Royal Tomb, Naksh-i-Rustam



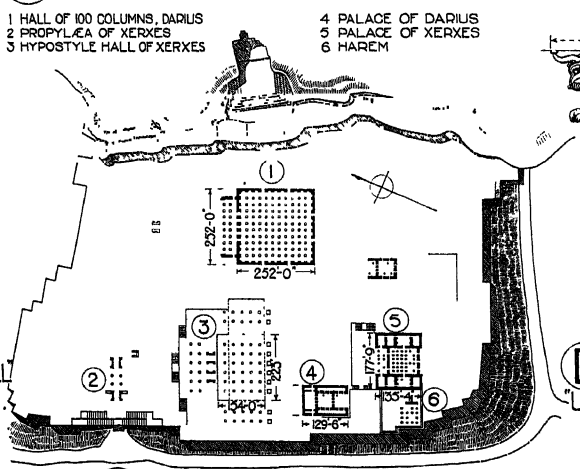
C. Persepolis: Hall of the Hundred Columns



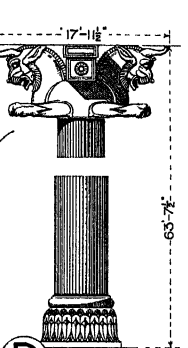
A VIEW OF PALACES & PERSEPOLIS FROM N.W. (RESTORED)



B DOUBLE "BULL" CAP: PROPYLÆA.



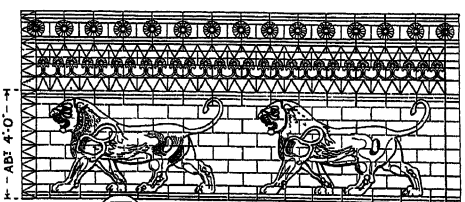
C PLAN OF PALACE PLATFORM.



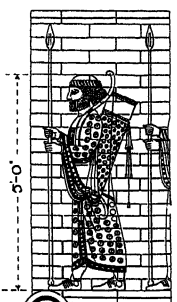
D DOUBLE "UNICORN" CAP: PROPYLÆA



E BAS-RELIEF: PERSEPOLIS.



F LION FRIEZE: SUSA.



G ARCHER FRIEZE: SUSA.

rooms were vaulted with the clay of the country and not covered with timber, which was very scarce. The internal construction was thus evidently one of walls and vaults and not of columns and architraves; for no bases even of columns have been excavated. The vaulted nature of the roofing supported on continuous walls, which was once a disputable matter, would therefore now seem to be a proved certainty. A bas-relief found by Layard depicts buildings with domes, both spherical and elliptical, and from this it would appear that the dome, as well as the vault, was in use among the Assyrians, though to what extent we have at present no evidence (p. 47 B).

THE PERSIAN PERIOD

Palaces and tombs at Susa and Persepolis suggest that the Persians adopted certain features from the conquered Assyrians, such as raised platforms, sculptured monsters, slabs of bas-relief, besides glazed and coloured brickwork which it is their glory to have brought to perfection.

The **Palace Platform, Persepolis** (p. 56 A, C) is a remarkable structure, 1,500 ft. by 1,000 ft. in extent and 40 ft. above the plain, partly hewn out of the solid rock and partly built up of large blocks of local stone laid without mortar, but held together by metal cramps. The approach on the north-west was by a magnificent flight of steps, 22 ft. wide, shallow enough for horses to ascend. The **Propylæa** (p. 56 C) built by Xerxes (B.C. 485–465) formed a monumental entrance, flanked by man-headed bulls and massive piers glowing in glazed bricks, and through this gateway passed foreign ambassadors, subject princes, and royal retinues to the palaces on the platform. Among these stood out the "**Hall of the Hundred Columns**" (p. 55 C) built by Darius (B.C. 521–485), which, according to Plutarch, was burnt by Alexander the Great. It was probably the audience hall or throne room of the palace and was 225 ft. square, enclosed by a brick wall, 11 ft. thick, in which there were some 44 doorways and windows. The walls flanking the entrance portico were enlivened with topical bas-reliefs representing the king with his retinue receiving ambassadors. The flat cedar roof was supported upon 100 columns, 37 ft. high, of which only one remains *in situ*, and they recall the hypostyle halls of Egyptian temples, but have a character all their own with moulded bases, fluted shafts, and curious, complex capitals with vertical Ionic-like volutes and twin bulls supporting the roof-beams (p. 56 B, D). The **Palace of Darius** (p. 56 C), the earliest built on the platform, was rectangular in plan with a portico of sixteen columns. The stone lintels and jambs of doors and windows, as well as the bases of the portico columns, still exist, though the rubble walls have crumbled away. The **Palace of Xerxes** (B.C. 485) (p. 56 C), though it consisted only of a central hall and three columned porticoes, was of great size, with an area of some 24,000 square ft. The Palace was further raised on a podium 10 ft. high, reached by four flights of steps. Columns of porticoes and hall, which originally numbered seventy-two, though only seventeen remain, were 65 ft. high with bell-shaped bases and fluted shafts. Those of the north portico and great hall had elaborate capitals of Ionic volutes set on end and surmounted by double bulls, while those of the east and west porticoes consisted only of double bulls or griffins. Flower gardens, orange groves, and summer pavilions formed the luxurious surroundings of all the palaces of Darius and Xerxes at Persepolis.

The **Tomb of Darius, Naksh-i-Rustam** (p. 55 B), eight miles north of

Persepolis, is one of four rock-hewn sepulchres of the great Achæmenian kings, and was probably suggested to Darius (d. B.C. 485) by the Tombs of the Kings at Thebes, which he saw when serving under Cambyses in Egypt. It reproduces the façade, 50 ft. wide, of the small palace of Darius at Persepolis, with four columns of the double-bull type, central doorway with Egyptian-like cornice, and upper compartment in which two rows of figures in relief support a prayer platform surmounted by a bas-relief of the king (8 ft. high) before an altar, with uplifted arm worshipping the sun-god whose image appears above him.

Susa, the administrative capital of the ancient Persian Empire, has remains of great palaces of Xerxes and Artaxerxes, and here were found by M. Dieulafoy those world-famous friezes of glazed brickwork in green, yellow, and blue, known as the "Lion frieze" and the "Archer frieze," notable instances of the traditional beauty of Persian decoration, and now the treasures of the Louvre Museum, Paris (p. 56, F, G).

The **Tomb of Cyrus, Pasargadæ** (B.C. 529), which that monarch made the capital of Persia, is of unusual design, with its single chamber (10 ft. by 7 ft.) perched on a high stylobate of six steps, not unlike the Lycian tombs or the small Greek temples. This little tomb has been made famous by Strabo, Herodotus, and Pliny, and was visited by Alexander the Great on his way to India, who then saw the treasures, tapestries, and gilded sarcophagus of the king which, on his return, had been desecrated and rifled.

SELEUCID AND SASSANIAN ARCHITECTURE

(B.C. 312—A.D. 642)

The architecture which succeeded that of the Persians is interesting, though not of great importance, and most of our knowledge of the subject is derived from the works by Dieulafoy and Perrot and Chipiez.

The Seleucid Dynasty (B.C. 312–280), which succeeded on the death of Alexander, did not produce any noteworthy type, but during the Sassanian Dynasty (A.D. 226–642), when the principal city was Ctesiphon, a number of buildings were erected which form a connecting link between Assyrian architecture on the one hand and Byzantine on the other.

The **Palace, Sarvistan** (A.D. 350) (p. 61) is an interesting Sassanian building, and an idea of its general appearance may be obtained from the restored view (p. 61 G). The principal feature consisted of a triple-arched portico behind which rose a beehive dome of brick with openings for light and ventilation, and a long barrel vault over each side compartment, reminding one of Assyrian palaces. In this building the central dome over the square hall is carried by means of roughly corbelled angle semi-domes (p. 61 H), originally plastered over, while the side compartments have curious stumpy columns, supporting lofty arches.

The **Palace, Feruz-abad** (A.D. 450) (p. 61) was a structure of some importance, with an entrance leading into three domed halls, beyond which is a court. The transverse section (p. 61 C) shows the arrangement of the domes, and the roughly formed angular semi-domes which enable the circular domes to be applied to square compartments; while the exterior restored (p. 61 A, B) gives an idea of the general appearance of the building.

The **Palace, Ctesiphon** (A.D. 550) (p. 61) must have been an interesting structure, built of coloured brickwork, but is now only a ruin, consisting of a great central arched portal (p. 61 M), about 83 ft. wide, leading into

a throne room, 160 ft. deep, flanked by side walls no less than 24 ft. thick, and covered with a remarkable vault, elliptical in form, and obviously founded on Assyrian prototypes. The lower courses of this vault, and indeed of all Sassanian domes, appear to have been built in horizontal layers to avoid the oblique pressure resulting from radiating voussoirs. It is indeed considered probable that this great vault of brick is a reproduction of the native architecture formed with bundles of reeds and rammed earth, as built to this day in the valley of the Tigris and Euphrates. The façade of this remnant of the palace (p. 61 L, M) consists of a wall 112 ft. 6 ins. high, arranged with tiers of pilasters and arches divided by string courses, not unlike Roman façades.

Discoveries of the remains of various Sassanian palaces have been made of recent years. The **Palace of Khosrau II, Dastagerd,** was identified in A.D. 1840 by Rawlinson, and recent visitors have told how the ruin of this and probably of many other palaces has been completed by carrying off the bricks for use in building modern villages. The ruins of Dastagerd consist of a narrow range of substructures nearly 2,000 ft. in length, massively built of large bricks and hard mortar, with rudely pointed arches, and protected at intervals by bastions on one side and fronted by porches on the other.

The architecture of the Saracens in Persia is dealt with on p. 844.

JEWISH ARCHITECTURE

The chief characteristics of Hebrew architecture would seem to have been derived from Babylon on the east and Egypt on the west, through the seafaring and trading Phœnicians. The structural part of the style followed the Egyptian and Phœnician practice of cutting out tombs in the rock, and to this succeeded the use of huge, quarried blocks of stone, such as those in the arch which Robinson discovered in Jerusalem. The **Palace of David** and the **Temple of Solomon,** both at **Jerusalem,** were of the Phœnician type of architecture, a style which had its origin in cutting piers in the living rock. They were placed on a mighty natural platform partly built up on one side, like that at Persepolis. The Temple at Jerusalem was the great monumental structure commenced by Solomon (B.C. 1012), and the elaborate Biblical description of its parts (1 Kings vi–vii, and 2 Chronicles, iii–iv) mentions entrance pylons, courts, and the brazen twin columns of Jachin and Boaz. The Temple was added to by Herod (B.C. 18) and its lofty site is now partly occupied by the Dome of the Rock or so-called Mosque of Omar (p. 837).

There is little left in Syria of ancient Jewish architecture, and all has been obliterated or changed by Romans, Early Christians, Saracens, and Crusaders. The chief monuments of antiquity are the rock-cut tombs round Jerusalem and the remarkable series at the rock-cut city of Petra, numbering over 750, some of which date back to the sixth century B.C. and show Egyptian influence in pylons and cavetto cornices, while later tombs show Greek and Roman influence. These Bible countries passed successively under the influence of Greece and the rule of Rome, whose architecture, as in the group of temples at Baalbek and the temples and colonnades at Samaria (Sebastieh) is distinct from native types. The round towers of the Roman gate at Samaria have been found to have been erected on older Greek towers which had taken the place of still older Hebrew towers.

4. COMPARATIVE ANALYSIS

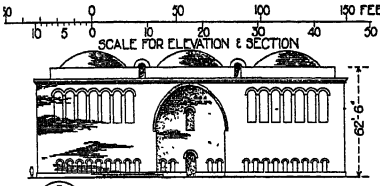
A. **Plans.**—The Assyrians, who throughout this comparative table are taken to include Babylonians, erected temples and palaces on artificial platforms, reached by flights of steps, 30 to 50 ft. above the plain, for defence and protection against malaria (p. 48 A). Halls and rooms grouped round open quadrangles were long and narrow, so as to be easy to vault (p. 48 H). Ziggurats (pp. 47 A, 55 A), which rose tower-like in diminishing terraces to the temple observatory at the top, had their angles to the cardinal points, thus differing from Egyptian pyramids whose sides were so placed. Assyrian buildings were designed for both internal and external effect, in contrast with Egyptian temples which, behind the massive entrance pylons, were enclosed by a plain and forbidding girdle wall which gradually decreased in height from front to back. The Persians, like the Assyrians, placed their palaces on lofty platforms, often partly rock-cut and partly built-up, but the style of palaces at Susa and Persepolis (p. 56 A, C) was influenced by that of Egyptian temples, and the vast halls had widely spaced columns which suggest timber roofs, in contrast to the corridor-like, vaulted apartments of Assyrian palaces.

B. **Walls.**—Assyrian walls were composite structures of sun-dried bricks faced with kiln-burnt bricks, which contrast with the massive stone walls of the Egyptians and the solid marble walls of the Greeks. Palace walls were frequently sheathed internally with alabaster bas-reliefs which record military and sporting exploits. External walls were plainly treated, sometimes with alternating vertical projections and recesses or with half-cylinders, and the top was often finished with battlemented cresting, while towers flanked palace entrances and occurred at short intervals along the walls (p. 48 A, B, D, F). The Persians built their walls of brick, which as at Persepolis have crumbled away, but the massive stone blocks of door and window architraves and the broad stone stairways have in many instances withstood the ravages of time and weather. The highly glazed and coloured brickwork, as found at Susa and Persepolis (p. 56 F, G), was applied to give that surface finish to the walls which in Greece was obtained by polishing the surface of the marble to great brilliancy.

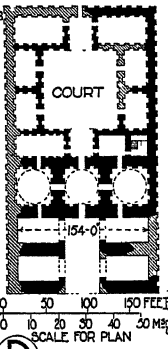
C. **Openings.**—Assyrian doorways were spanned by semicircular arches, here first met with as ornamental features, suitable to the nature of brick construction. At palace entrances the arches were enhanced by decorative archivolts of coloured bricks (pp. 47 D, F, 48 B, D). It is to be noted that the pointed arch was employed as early as B.C. 722 in the drains under the great palace at Khorsabad (p. 47 C), and indeed Assyria seems to have been the original home of this feature. Windows were not in use, but light was admitted through doors and probably through pipe-holes in walls and vaults (p. 48 J). The Persians used horizontal stone lintels for doors and windows, in contrast to the arches of the Assyrians, and some may still be seen among the ruins at Persepolis where large doorways are surmounted by cornices similar to the Egyptian gorge (p. 56 A).

D. **Roofs.**—Assyrian roofs, supported on brick vaults over the halls, were externally flat and were probably rendered waterproof by means of bitumen (p. 48 A). As is still usual in the unchanging East, they were used as a resort in the cool of the evening and were concealed behind battlemented cresting. Strabo states that the houses of Babylon were vaulted, as at Khorsabad (p. 48 J), and the dome was probably employed over small

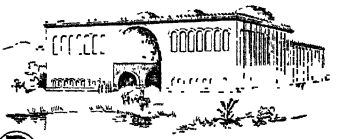
PALACE AT FERUZ-ABAD



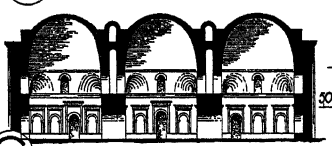
A PRINCIPAL FACADE (RESTORED)



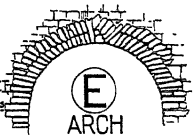
D PLAN



B EXTERIOR (RESTORED)



C TRANSVERSE SECTION



E ARCH CONSTRUCTION



F RECESSES

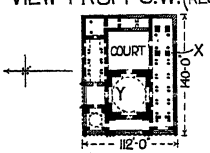
PALACE AT SARVISTAN



H PENDENTIVE IN HALL "Y"



G VIEW FROM S.W. (RESTORED)

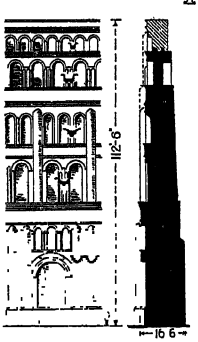


J PLAN

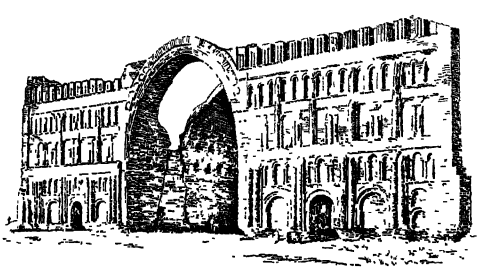


K COLUMN IN HALL AT "X"

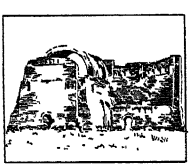
PALACE AT CTESIPHON



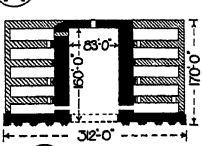
L RESTORATION ONE BAY



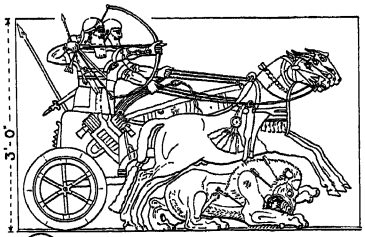
M VIEW OF EXISTING RUINS



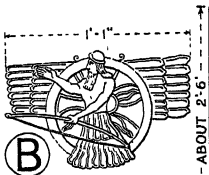
N RUINS FROM S.



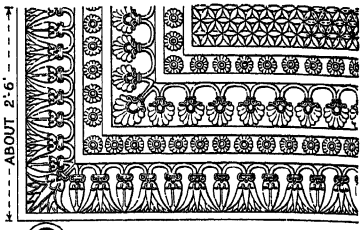
P PLAN



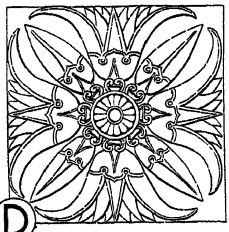
A WALL SLAB: LION HUNT
FROM N.W. PALACE: NIMROUD



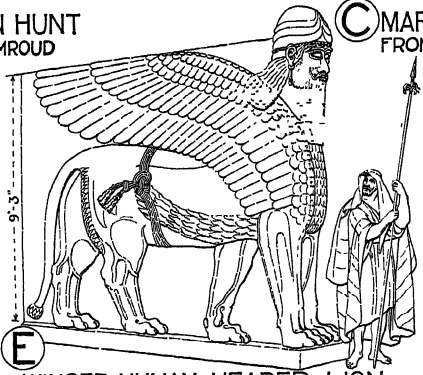
B WINGED GLOBE WITH FIGURE



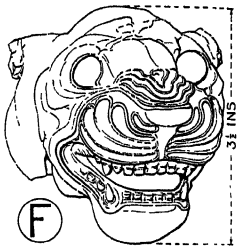
C MARBLE PAVEMENT SLAB
FROM KOUYUNJIK



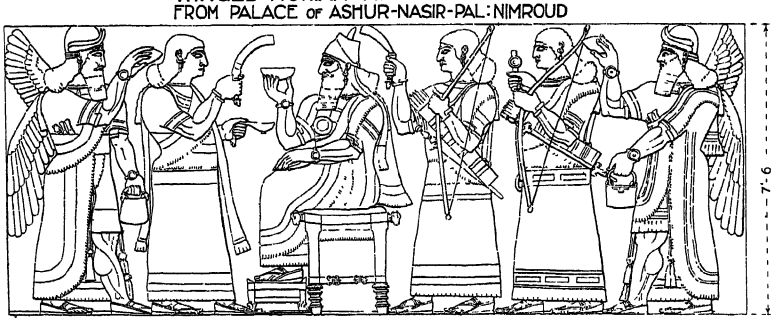
D CEILING DECORATION
LOTUS FLOWERS AND BUDS



E WINGED HUMAN HEADED LION
FROM PALACE OF ASHUR-NASIR-PAL: NIMROUD



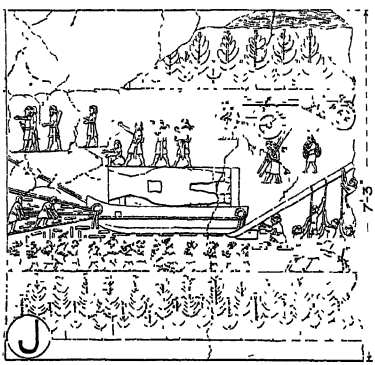
F HEAD OF A LION
IN WHITE LIMESTONE



G WALL SLAB: KING ON THRONE AND ATTENDANTS · FROM PALACE OF ASHUR-NASIR-PAL-NIMROUD



H WINGED DEITY : NIMROUD



J TRANSPORT OF A BULL: KOUYUNJIK



K EGYPTIAN KING IN IVORY

compartments, as represented on wall slabs from Nineveh, and it is indeed a traditional Eastern form, owing to its suitability for clay and brick construction (p. 47 B). Persian roofs, of which, however, none remain, were, it is believed, also flat and probably of timber; for at Susa and Persepolis they appear to have been supported on comparatively slender and widely spaced columns (pp. 55 C, 56 A).

E. **Columns.**—The Assyrians could not have used columns, as in all the excavations no columns or even bases have been found; indeed in Assyrian architecture the brick-built tower, and not the column, is the outstanding feature. Columns may, however, have been used in smaller buildings, such as the little fishing pavilion which, as represented on a slab from Khorsabad, has columns with an early form of the Ionic scroll (p. 47 H). The Persians on the contrary used columns, widely spaced and comparatively slender, as they had only to support the weight of timber and clay roofs, instead of ponderous stone slabs, as in Egypt (pp. 55 C, 56 A, B, D). The Persians invented a most distinctive type of column, probably founded on those they had seen in Thebes, but with high moulded bases, fluted shafts, and capitals of recurring vertical scrolls, perhaps derived from Asiatic Greek buildings, such as the Temple of Artemis, Ephesus (B.C. 550) (p. 101). Sometimes these columns were surmounted by twin bulls, unicorns, horses, or griffins, on the backs of which were placed the cross-beams of the roof. This peculiar and somewhat grotesque treatment has been supposed to have had a timber origin in which the capital was formed either of a long beam or of a fork which was the simplest type of bracket capitals.

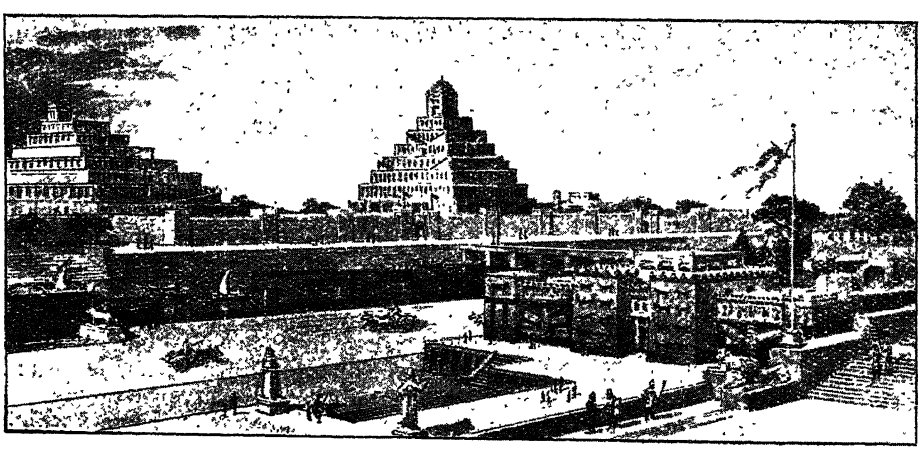
F. **Mouldings.**—Assyrians, like Egyptians, had no general use for mouldings, as their architecture was on too vast a scale for such treatment, and moreover the glazed tiles and marble slabs which protected the perishable brick walls were sufficient decoration without mouldings (pp. 47 G, 48 G). It is noticeable too that mouldings only came into general use after they had been evolved and standardised by the Greeks. Persians were susceptible to the influence both of Egyptian and Greek models, and allowed themselves much latitude in adapting and combining various motifs, and the conglomerate character of the style is nowhere more conspicuous than in their use and application of mouldings. There is at Persepolis a curious *mélange* attributable to this dual source in which carved bases, moulded capitals, and Ionic-like volutes are combined with the Egyptian "gorge" cornice over doorways (p. 56 B, D).

G. **Ornament.**—The Assyrians used as their chief architectural ornament chiselled alabaster slabs which show an extraordinary refinement of line and detail far superior to Egyptian carvings, and these, both in treatment and colouring, undoubtedly influenced Greek bas-reliefs (p. 62). These slabs, some of which are in the British Museum, form an illustrated record of Assyrian pursuits (p. 62 A, G, J). The well-known pavement slab from Nineveh (p. 62 C), with rosettes, palmettes, and border of lotus buds and flowers, shows a decorative art, doubtless derived from Egyptian sources, but tempered by the art of Greece. The Assyrians displayed their skilled craftsmanship not only in stone carving, but also in bronze working, as shown in the gates of Shalmaneser II (B.C. 860–825) which are in the British Museum. The external ornament of Assyrian palaces appears to have been concentrated around the main entrance (p. 48 B), in the sculptured monsters which guarded the kingly threshold, and in the brilliantly glazed and coloured archivolt of the archway (pp. 47 D, E, F, 48 E, 62 E). The Persians continued

the use of flanking monsters to doorways, as in the Propylæa at Persepolis, and of carved dadoes to stairway walls. The outstanding feature of ornament as developed by the Persians is their mastery in the preparation and application of pure colour to glazed bricks, as in the " Archer " and " Lion " friezes from Susa, now in the Louvre Museum, Paris (p. 56 F, G), or as in the bas-relief from Persepolis (p. 56 E). Persians, like Assyrians, reserved ornament for special positions ; whereas the Egyptians spread it broadcast over their unbroken wall surfaces. The Greeks, as we shall see, followed the Assyrian method in concentrating ornament, allocated it to entablature, frieze, and pediment, and standardised it in the " Orders of Architecture," which, as regards the variation of detail, must be regarded from the point of view of ornament, though their *raison d'être* is essentially constructive (p. 72).

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BABYLON (RESTORED).



GREEK ARCHITECTURE

1. INFLUENCES

i. Geographical.—Greece is surrounded on three sides by the sea, and her many natural harbours made it easy for those early traders, the Phœnicians, to carry on extensive commerce with the country. This sea influence also fostered national activity and enterprise, just as it has done in Great Britain; while the proximity of a multitude of islands, colonised from the mainland and keeping up communication with it by sea, produced a race of hardy and adventurous colonists. Ancient Greece, however, extended geographically far beyond the mainland and adjacent islands, and thus ruins of Greek buildings are found in the Dorian colonies of Sicily and South Italy, and in the Ionian colonies of Asia Minor. The mountainous nature of the country separated the inhabitants into groups or clans, and was thus responsible for that rivalry which characterised the old Greek states, both in peace and war.

ii. Geological.—The chief mineral wealth of Greece was in her unrivalled marble, the most beautiful and monumental of all building materials, and one which facilitates exactness of line and refinement of detail. This marble is found in abundance, notably in the mountains of Hymettus and Pentelicus near Athens, and in the islands of Paros and Naxos. The Greeks attached so much importance to the quality of fine-grained marble for producing exact outlines and smooth surfaces that, as in the Temples at Pæstum, they even coated coarse-grained limestone with a layer of marble "stucco" in order to secure this effect, which is the great characteristic of their architecture.

iii. Climatic.—The climate was intermediate between rigorous cold and relaxing heat ; hence the Greek character, combining the energy of the north with the lethargy of the south, produced a unique civilisation. The clear atmosphere, largely resulting from the rocky nature of the country and the absence of forests, was conducive to the development of that love of precise and exact forms which are special attributes of Greek architecture. The climate favoured an outdoor life, and consequently the administration of justice, dramatic representations, and most public ceremonies took place in the open air, and to this is largely due the limited variety of public buildings other than temples. The hot sun and sudden showers were probably answerable for the porticoes and colonnades which were such important features.

iv. Religious.—The Greek religion was in the main a worship of natural phenomena, of which the gods were personifications, and each town or district had its own divinities, ceremonies, and traditions. There are also traces of other primitive forms of religion, such as the worship of ancestors and deified heroes. The priests who carried out the appointed rites, in which both men and women officiated, were not an exclusive class, and often served for a period only, retiring afterwards into private life.

The principal Greek deities with their attributes and Roman names are as follows :

Greek.		Roman
Zeus	Chief of the gods and supreme ruler	Jupiter (Jove)
Hera	Wife of Zeus and goddess of marriage	Juno
Apollo	Son of Zeus and father of Æsculapius. The god who punishes, heals, and helps. Also the god of the sun, of song and music, and founder of cities	Apollo
Hestia	Goddess of the hearth (sacred fire)	Vesta
Heracles	God of strength and power	Hercules
Athena	Goddess of wisdom, power, peace, and prosperity	Minerva
Poseidon	The sea god	Neptune
Dionysos	God of wine, feasting, and revelry	Bacchus
Demeter	Goddess of earth and agriculture	Ceres
Artemis	Goddess of the chase	Diana
Hermes	Messenger of the gods, with winged feet ; therefore god of eloquence	Mercury
Aphrodite	Goddess of love and beauty	Venus
Nikè	Goddess of victory	Victoria

v. Social.—The Minoan civilisation of the early Pelasgic inhabitants belonged to the bronze age, as is evident from remains found near the Ægean Sea, particularly in Crete, Hissarlik (in the Troad), Mycenæ, and Tiryns, and this early civilisation fell before the courageous Achæans or Homeric Greeks from the north. The poems of Homer, apparently a Pelasgic bard who sang for Achæan masters, picture Greek life as it was about the twelfth century B.C. The Achæans, in their turn, succumbed to an influx of Dorians from farther north, who established themselves at Sparta and elsewhere in the Peloponnese. In Classical times the land was peopled by Ionians (descendants of the Pelasgi), Æolians (descendants of the Achæans), and by Dorians. Dorian Sparta and Ionian Athens were the principal centres of Greek national life. It was not till some five hundred years after the war against Troy, which affords proof of early intercourse between Greece and Asia, that the new Hellenic civilisation showed itself in the construction of the Doric Temple of Corinth (B.C. 650). The poems of Hesiod (C. B.C. 750) depict the gloomy outlook and sordid life of the Bœotian peasantry at this time when art was almost in abeyance. The people of the

various Greek states were united by devotion to their religion, and by religious festivals, as well as by their love of music, the drama, and the fine arts, and also by national games and by emulation in those manly sports and contests for which they were so distinguished. The Greeks were great colonists, and emigration, especially to Asia Minor, South Italy, Sicily, and the coasts of the Mediterranean, was directed by government as early as B.C. 700, not only to develop trade, but also to provide an outlet for the superfluous population, and so reduce internal party strife. Thus the colonies, as usually happens, were often peopled by citizens of a more energetic and go-ahead character than those on the mainland ; and therefore some of the most important Greek architecture in the Doric style is in South Italy and Sicily, and in the Ionic style in Asia Minor.

vi. Historical.—Whether or no the war with Troy, described by Homer, be an actual fact, the incidents related have a substratum of truth, and the tale probably arose out of the early conflicts of the Greeks in Western Asia ; while for the fourth and fifth centuries B.C. there are the more or less reliable histories of Herodotus, Thucydides, and Xenophon. The cities of Greece had by this time settled down to their several forms of government—tyrannic, aristocratic, or democratic—and most of their colonies had been founded. The Persians under Cyrus, having captured Sardis, overthrew the kingdom of Lydia ; whereupon the Ionian Greeks of Asia Minor became subject to Persia, and it was their revolt (B.C. 499–493), which led to the Persian wars. The first great Persian invasion was ended by the victory of the Greeks at the battle of Marathon (B.C. 490) ; and the second invasion by Xerxes was terminated by the naval victory of Salamis (B.C. 480) and the land battle of Platæa (B.C. 479). The national exultation over these victories is largely responsible for the fact that the most important temples were built in the fifty years which followed the battles of Salamis and Platæa. The rule of Pericles (B.C. 444–429) marks the climax of Athenian prosperity, but the wonderfully rapid growth of Athens excited the jealousy of the slower Spartans, and this brought about the Peloponnesian war (B.C. 431–404), which ultimately established the supremacy of Sparta, but her arbitrary and high-handed conduct roused other states against her, and the leadership passed successively to Thebes and Macedonia. The latter had hitherto been considered a half-barbarian state ; but thanks to the ability of Philip, King of Macedonia, and of his son Alexander the Great, it rose to a leading position in Greece. In B.C. 334 Alexander set out on his great expedition, and in six years he subdued the Persian Empire, having besieged and taken Tyre *en route* and received the submission of Egypt, where he founded the famous city of Alexandria, and thus brought Egypt and Greece into contact with one another. His conquests extended to Northern India, and Hellenic art and civilisation thus spread through Western Asia. On his death at Babylon (B.C. 323) the empire he had created was split up among his generals and Egypt fell to Ptolemy, who founded a dynasty (p. 16) ; while in Greece an unsuccessful attempt was made to start leagues between cities, such as the Achæan and Æolian Leagues. The natural isolation and mutual animosity of the Greek communities afforded all too good an opportunity for the intrusion of the centralised and united power of Rome, and thus Roman interference gradually increased until Greece became a Roman Province (B.C. 146). *En revanche*, where arts, not arms, were concerned,

> " Græcia capta ferum victorem cepit et artes
> Intulit agresti Latio."

2. ARCHITECTURAL CHARACTER

Greek culture naturally owed much to preceding Oriental civilisations, but the Greeks, by reason of their innate artistic sense, so profoundly influenced the development of European art that Greece must be regarded as the veritable source of literary and artistic inspiration, and it has been truly said, " Whate'er we hold of beauty half is hers." Greek architecture stands alone in being accepted as beyond criticism, and therefore as the standard by which all periods of architecture may be tested.

THE EARLY PERIOD

(c. B.C. 3000—B.C. 700)

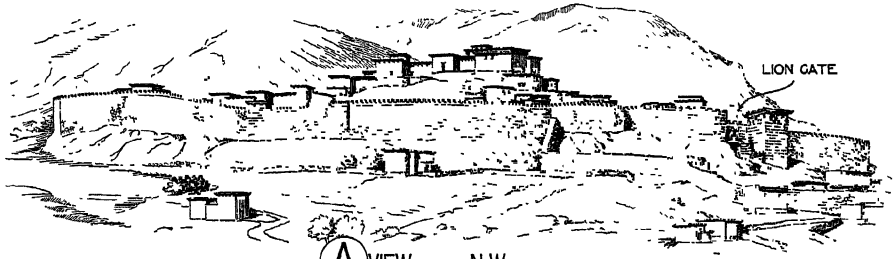
Minoan and Mycenæan architecture, also known as Pelasgic or Primitive, are rough and massive in character, although it is evident from recent excavations in Crete that the builders of this time had considerable knowledge and skill in domestic architecture. The character of the architecture is now chiefly known from the walls, which are of three kinds of masonry (p. 69 G): (1) " Cyclopean," i.e. masses of large rough stones piled one on another, with small pieces in the interstices, and the whole bound together with clay mortar; of this there are examples at Argos, Tiryns, Mycenæ, Knossos in Crete, and Athens. (2) Rectangular, i.e. carefully hewn rectangular blocks in regular courses; but the joints between stones in the same course are not always vertical: there are examples in the entrances and towers at Mycenæ, and in the entrance passages in the " tholoi " or beehive tombs. (3) Polygonal, i.e. many-sided blocks, accurately worked so as to fit together, examples of which are found at Mycenæ, in the Acropolis wall at Athens, and at Cnidos. Thus all three kinds occur in structures of the " Mycenæan " age, and in out-of-the-way places such as Caria their use survived for centuries. Cyclopean masonry seems to have been the parent of rectangular and polygonal, but it is not definitely known whether rectangular preceded polygonal masonry. Various other features, such as corbels, inclined blocks, and arches, characterise the work of this period. Corbels were fashioned in horizontal courses projecting one beyond the other till the apex was reached, thus producing triangular openings, as above the doorways of the tholos tombs (p. 70 C), corbelled vaults, as at Œniadæ, Assos, and Tiryns, or dome-shaped roofs, as in the Treasury of Atreus at Mycenæ (p. 73). Inclined blocks (p. 69 G) sometimes formed triangular-headed openings, as in the sanctuary on Mount Ocha in Eubœa, and the ancient shrine of Apollo on Mount Cynthos, Delos. A few examples of Greek arches are extant, viz. a Cyclopean arch at Cnidos, an arch with a keystone (partially dropped) in Acarnania, and an arched gateway at Œniadæ. A water-channel or drain at Athens, which crosses the town from east to west, is partly arcuated and partly roofed with projecting corbels. The barrel vault occurs in subterranean funeral chambers in Macedonia, in the vaulted passages at the theatre at Sicyon, in the tunnel leading to the Stadion at Olympia, and in other places.

THE HELLENIC PERIOD

(B.C. 700—B.C. 146)

The Hellenic style which followed the Mycenæan is, however, the recognised Greek type of architecture, which was essentially columnar and trabeated (*trabs* = a beam), and this gave it that simple, straightforward

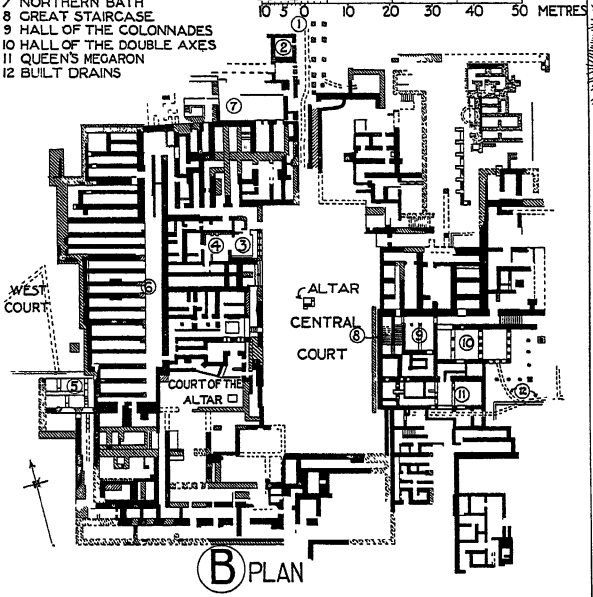
THE CITADEL: MYCENÆ



A VIEW FROM N.W.

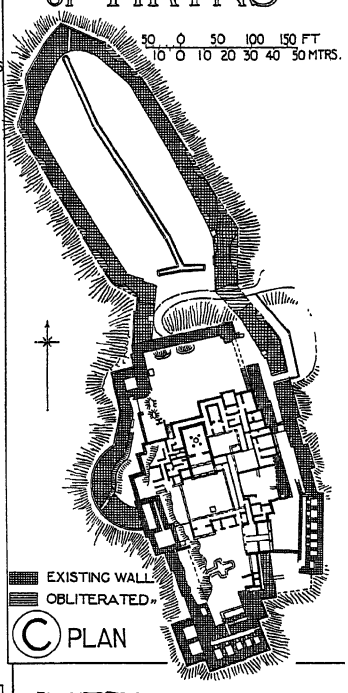
PALACE OF KING MINOS: KNOSSOS. CRETE

1 N ENTRANCE & PORTICO
2 BASTION & GUARD HOUSE
3 ANTE-ROOM TO THRONE ROOM
4 THRONE ROOM WITH TANK
5 W PORTICO
6 LONG GALLERY WITH MAGAZINES
7 NORTHERN BATH
8 GREAT STAIRCASE
9 HALL OF THE COLONNADES
10 HALL OF THE DOUBLE AXES
11 QUEEN'S MEGARON
12 BUILT DRAINS

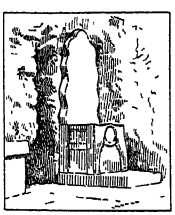


B PLAN

THE CITADEL OF TIRYNS



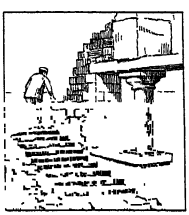
C PLAN



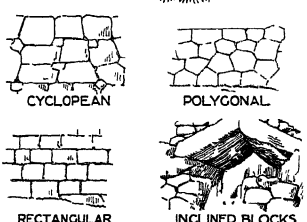
D THRONE OF KING MINOS



E JARS AND KASELLES

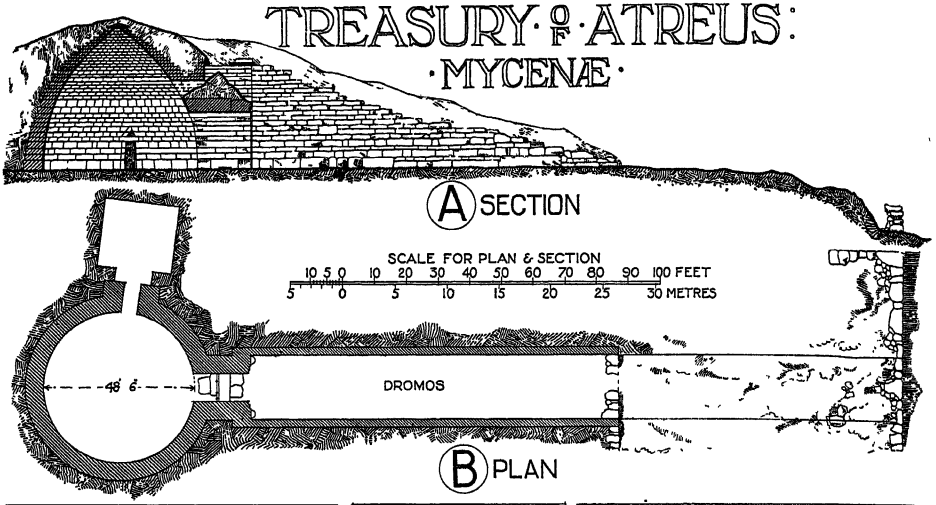


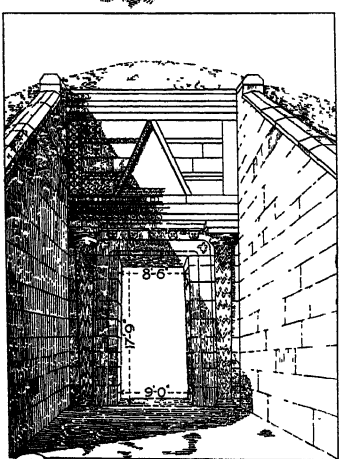
F A STAIRCASE

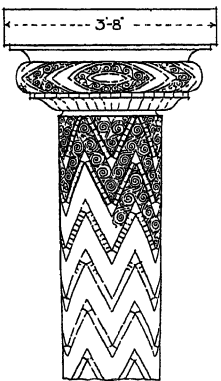


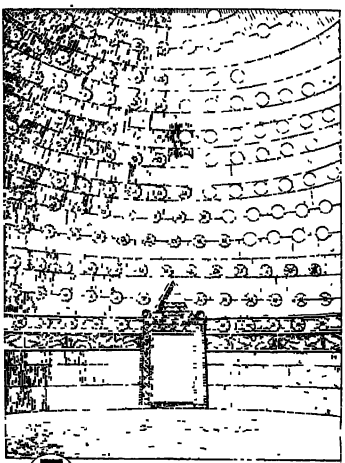
G METHODS OF WALLING

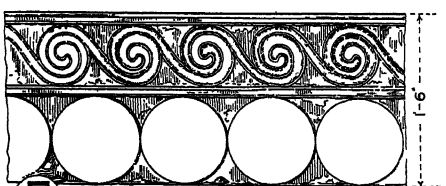
TREASURY OF ATREUS: MYCENÆ

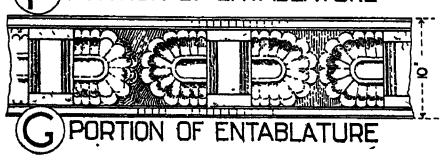


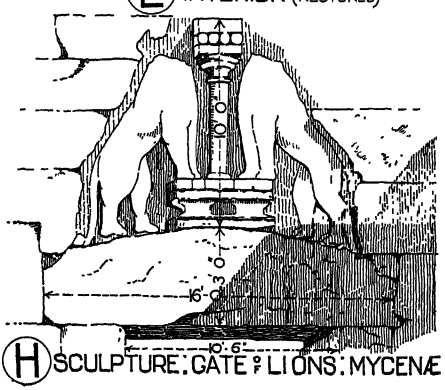












character in which the constructive system is self-evident, uncomplicated by such devices as are involved in arch, vault, and dome. The general character of early Hellenic architecture is archaic and severe, and Mycenæan influence is apparent; but a gradual change towards refinement took place, and columns became more graceful and mouldings more refined. Unity of effect in the larger temples was obtained by a single, uniform colonnade which surrounded the naos (p. 92 A), thus forming a strong contrast with the number of courts, halls, and chambers, decreasing in size from the entrance pylons, which composed a typical Egyptian temple. Stability was achieved by a judicious observance of the laws of gravity, as the pressure of the superimposed weight acted vertically, and consequently only needed vertical resistance. Lintels of any great length in stone or marble would not, by reason of the granular nature of this material, withstand pressure from above without support from below, so columns had to be placed close together, and these constructive conditions called for that simplicity of treatment characteristic of the style. The equal distribution of pressure between the stone or marble blocks of walls and columns was effected by rubbing the beds of the blocks to finely fitting surfaces, and so mortar was unnecessary, though metal cramps were sometimes used. There is also evidence that due consideration was given to the nature of the material employed; for Choisy found in the temples at Ægina and Pæstum that stones were laid according to the pressure they had to bear; thus stone blocks in walls and columns were laid on their natural bed, i.e. as found in the quarry, while for architraves they were placed with the planes of their beds vertical, as they were then better able to withstand the cross-strain, and thus columns could be placed wider apart, or in other words a wider intercolumniation could be obtained.

Greek buildings designed on one constructive principle are naturally characterised by harmony and simplicity. Many refinements were practised in the great period of Greek art, in order to correct optical illusions. The long horizontal lines of such features as stylobates, architraves, and cornices, which, if straight in reality, would appear to sag or drop in the middle of their length, were formed with slightly convex outlines (p. 126 E, F, G). Mr. Penrose discovered that, in the Parthenon, the stylobate has an upward curvature towards its centre of 2·61 ins. on the east and west façades, and of 4·39 ins. on the lateral façades. Vertical features were also inclined inwards towards the top to correct the appearance of falling outwards; thus, in the Parthenon, the axes of the angle columns lean inwards 2·65 ins., and the axes of all the columns, if produced, would meet at a distance of a mile above the ground (p. 126 C). The shafts of the Parthenon columns have an entasis (see Glossary) of about $\frac{3}{4}$ in. in a height of 34 ft. (p. 126 D), and columns of other temples are similarly treated. Angle columns were not only set closer to the adjacent columns, but were also stouter, as it was found that they appeared thinner against the open sky than those seen against the solid background of the "naos" wall (p. 126 B). Pennethorne points out a further correction in use in an inscription from the Temple of Priene (p. 126 A), where, according to Vitruvius, Bk. VI, chap. ii, the letters at the top of the inscription were increased in size, and the letters at the lower part decreased, so that they might all appear of one size from the point of sight below. Other optical illusions in connection with columns are shown (p. 126 H, J). The finest sculpture completed the most important buildings, and the delicate adjustment and refined treatment, alike of

architecture and sculpture, were made possible by the hard, fine grain of the marble. Colour and gilding were also freely applied to architectural features and sculptures, and fragments lately excavated at Athens, Delphi, and elsewhere exhibit traces of the original colouring.

The Greeks developed the Doric, Ionic, and Corinthian "Orders of Architecture," and to these the Romans added the Tuscan and Composite, thus completing the "Five Orders of Architecture." An "Order" in Classic architecture consists of the upright column or support, including base and capital, and the horizontal entablature, or part supported. The latter is divided into architrave or lowest part, frieze or middle part, and cornice or upper part. The proportions of column and entablature vary in the different "Orders," as do also mouldings and ornament (p. 116). The origin and evolution of the different parts of the three Greek Orders are considered under their respective headings in Examples (pp. 78, 96, 107).

Art is generally evolved, according to Mr. J. Addington Symonds, through three stages: (1) the ardent and inspired embodiment of a great idea—this gives strength and grandeur; (2) the original inspiration tempered by increased knowledge and a clearer appreciation of limitations—the result is symmetry; (3) the ebbing of inspiration, with elaborated details—this produces a brilliant but somewhat disproportioned style. This process can be traced in all branches of Greek art. In architecture there is the sturdy strength of the Doric Order, the clear-cut beauty of the Ionic, and the florid detail of the Corinthian; in poetry the rugged grandeur of Æschylus, the exquisite symmetry of Sophocles, and the brilliant innovations of Euripides; while in sculpture the same changes are expressed in the different styles of Ageladas, Pheidias, and Praxiteles.

3. EXAMPLES

THE EARLY PERIOD

The Minoan Period dates back to B.C. 3000 according to Sir Arthur Evans, whose excavations of the Minoan Palace at Knossos, Crete, together with those in other parts of the island, have revolutionised theories as to the original roots of Greek art, by revealing palaces of an earlier date than those known as Mycenæan. The Mycenæan period lasted on the mainland till after the Trojan war, while in the islands of Cyprus, Crete, and Delos it continued even till the eighth century B.C., and remaining examples of both periods include town walls, palaces, and tombs.

The **Town Walls, Mycenæ** (p. 69 A), round the old citadel or acropolis about 900 ft. above sea level, are of massive masonry, both rectangular and polygonal, as referred to by Pausanias.

The **Gate of Lions, Mycenæ** (c. B.C. 1200) (pp. 69 A, 70 H), the principal entrance to the citadel, also belongs to this period. The opening, 10 ft. high, is flanked by upright stone jambs which support a lintel 16 ft. long. This carries a thin triangular slab, 10 ft. high and 2 ins. thick, of brownish limestone, on which is a relief of two lions rampant on either side of a central half-column with moulded capital and square abacus carved with four discs (p. 70 H). This is probably the most ancient sculpture in Europe.

The **Palace of King Minos, Knossos** (p. 69 B), has been proved to date from about B.C. 3000, although the upper part appears to have been added

about B.C. 2000. It is a remarkable structure laid out on a plan which was afterwards used for Roman palaces and camps, but because a strong Minoan navy protected the shores of Crete this most ancient palace was not fortified. About five acres of palace buildings have been excavated, an area more than two-thirds that of Westminster Palace. The apartments are grouped round a central courtyard, about 180 ft. by 90 ft., and were, moreover, in several storeys, reached by stairways (p. 69 F). Remarkable wall frescoes, coloured plaster ceilings, an olive press with huge oil jars (p. 69 E), and the remains of a system of drainage, with terra-cotta drain pipes, have been uncovered. This wonder-palace of the well-nigh mythical King Minos has revealed a civilisation and domestic customs at once mysteriously ancient and strikingly up-to-date ; while the archaic stone chair still stands in his audience chamber, as the most ancient throne in Europe (p. 69 D).

The **Palace, Tiryns** (p. 69 C), situated by the coast south-west of Athens, remains of which have been discovered by Drs. Schliemann and Dörpfeld, is of the greatest interest as showing the general arrangement of palaces, and the walls are of Cyclopean masonry.

The **Palace, Mycenæ,** is within the citadel and has flights of steps to an outer courtyard from which, by traversing a portico and vestibule, the " megaron " or men's principal apartment is reached. Besides this megaron, which was surrounded by a roof but open to the sky in the centre, there were other chambers, whose uses have not been defined. The women's chambers are considered by some authorities to be planned to afford seclusion, while others, notably Prof. Ernest Gardner, hold that little or no attempt was made to effect this, and they quote evidence from Homer and other authorities.

The **Treasury of Atreus, Mycenæ** (c. B.C. 1185) (p. 70), is one of the " tholoi " or beehive tombs, originally modelled on the underground huts used as dwellings (Vitruvius, Bk. II, chap. i), such as have been found by Prof. Adler in Phrygia. At Mycenæ " tholoi " are confined to the lower city as opposed to the shaft graves of the upper city. This " Tholos," sometimes known as the Tomb of Agamemnon, is the largest and best preserved of these subterranean chambers, and consists of a long passage or " dromos," 20 ft. broad by 115 ft. long, leading to an entrance doorway of which a reconstruction, showing the original columns tapering downwards, has been set up in the British Museum. This doorway opens into a large domed chamber, about 50 ft. in diameter by 50 ft. high, with an adjoining square tomb chamber. The principal chamber is formed from base to apex of successive rings of stone blocks laid horizontally, each layer of which projects inwards over the one below, and most probably the finished, curved form was produced by cutting away the projections after the stones were laid. The original profile of the inner surface of the dome represents a species of parabolic curve, and the irregular form of the side opposite the entrance has been produced merely by the pressure of the earth against it from outside. The whole surface of the chamber was probably faced with plates of bronze, and some of the holes and bronze pins, supposed to have been used for attaching these plates, are still visible in the stone.

A similar tomb exists at Amyclæ, and one at Orchomenos, Bœotia, has a magnificently ornamented ceiling in its sepulchral chamber, while another at Menidi, Attica, has no fewer than five superimposed lintels to support the mass of earth above it. These tombs belong to the second stage in the evolution of the dwelling-house, the complete series being (*a*) natural cave ;

(*b*) artificial cave below ground; (*c*) artificial cave or hut above ground (p. 2).

THE HELLENIC PERIOD

The Hellenic Period includes all the principal temples and monuments erected between B.C. 700 and B.C. 146, the year of the Roman occupation, but the masterpieces of Greek architecture belong to the short space of about 150 years, between the defeat of the Persians, B.C. 480, and the death of Alexander, B.C. 323. Many Greek cities were either upon or in the immediate vicinity of a hill, known as the Acropolis or upper city, and this formed the citadel, where, for safety, the principal temples and treasure houses were erected.

The **Acropolis, Athens** (pp. iv, 75), stands foremost among world-famous building sites, and on it rose the temples which are the pride and crown of Athens. A general idea of the appearance of this Classic eminence in the days of its glory can be obtained from the restoration (p. iv), while a model in the British Museum shows also the rising and uneven character of the rock on which the temples stand (p. 75 A, B).

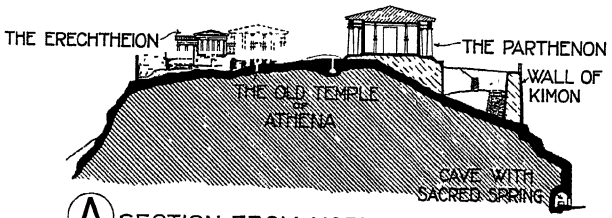
Other great centres of architectural activity outside Greece were in South Italy, Sicily, and Asia Minor.

TEMPLES

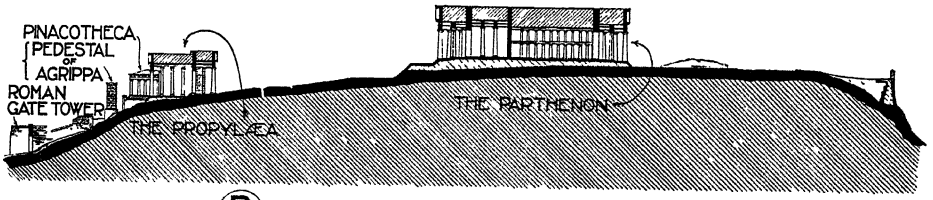
Temples formed the most important class of buildings of the Hellenic Period (p. 76), and we now describe their purpose and the different types in use. They were built with special regard to external effect and were ornamented with the finest sculpture in order to form fitting shrines for the deities to whom they were dedicated. They generally stood in a "temenos" or sacred enclosure (p. 97 K) and were raised on a stylobate of three steps. The "naos," containing the statue of the god or goddess, was the kernel of the plan, and there was sometimes a treasury chamber, besides front and rear porticoes and flanking colonnades. It will thus be seen that Greek temples differ materially in purpose and design from the large temples of Egypt, but they resemble the small "Mammisi" temples of the Egyptians (p. 35).

In some larger Greek temples there were internal colonnades placed over each other to support the roof (p. 81 B). On the two end façades over the columns a triangular-shaped pediment, usually but not always filled with sculpture, terminated the simple span roof (pp. 81 A, 87 B). These roofs were constructed of timber framing covered with marble slabs overlapping one another and finished off with antefixæ at the eaves (p. 79 H). The entrance door was generally in the centre of the east wall, behind the portico of columns, and was frequently planned so that the sun might light up the statue in the naos. With the exception of the Temple at Agrigentum (p. 84) these buildings are characterised by a general absence of windows, and this has given rise to several theories as to the method of admitting light; though this was really no difficult matter in the brilliant sunlight and bright skies of Greece, and indeed many authorities hold that light entered solely through the doorways. A clear-story concealed in the roof is the system favoured by Mr. Fergusson (p. 87 J); while Bötticher suggested that the lighting was effected by means of skylights (p. 87 K), and others contend with greater reason that light from the temple door was supplemented by that from

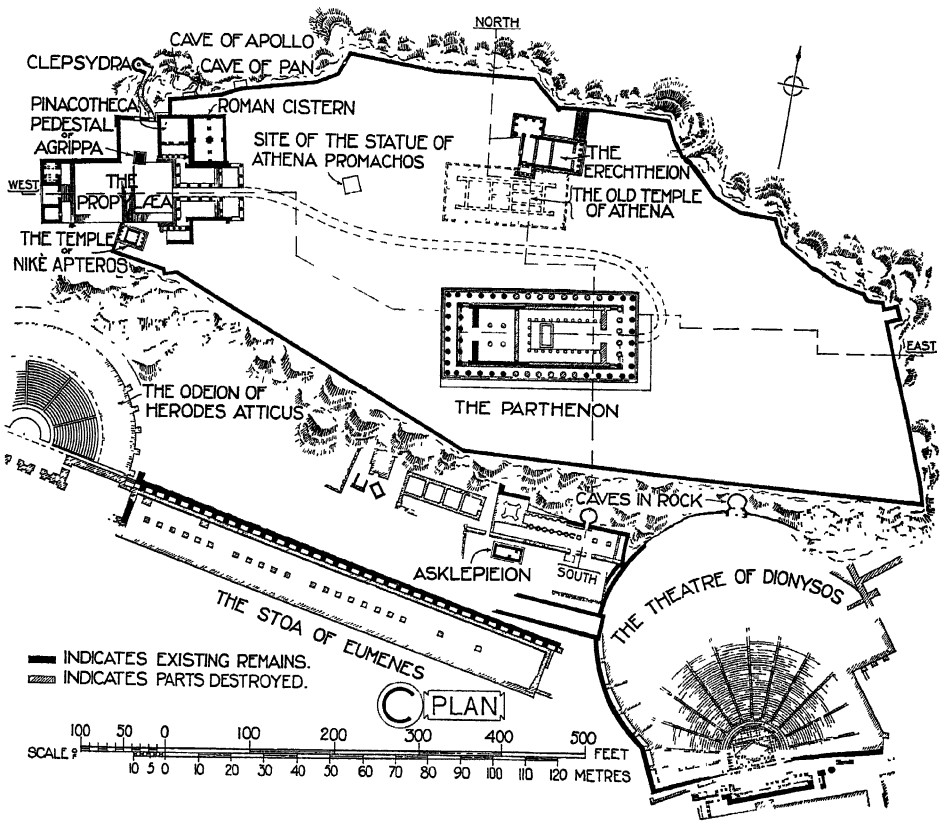
THE ACROPOLIS: ATHENS



A SECTION FROM NORTH TO SOUTH

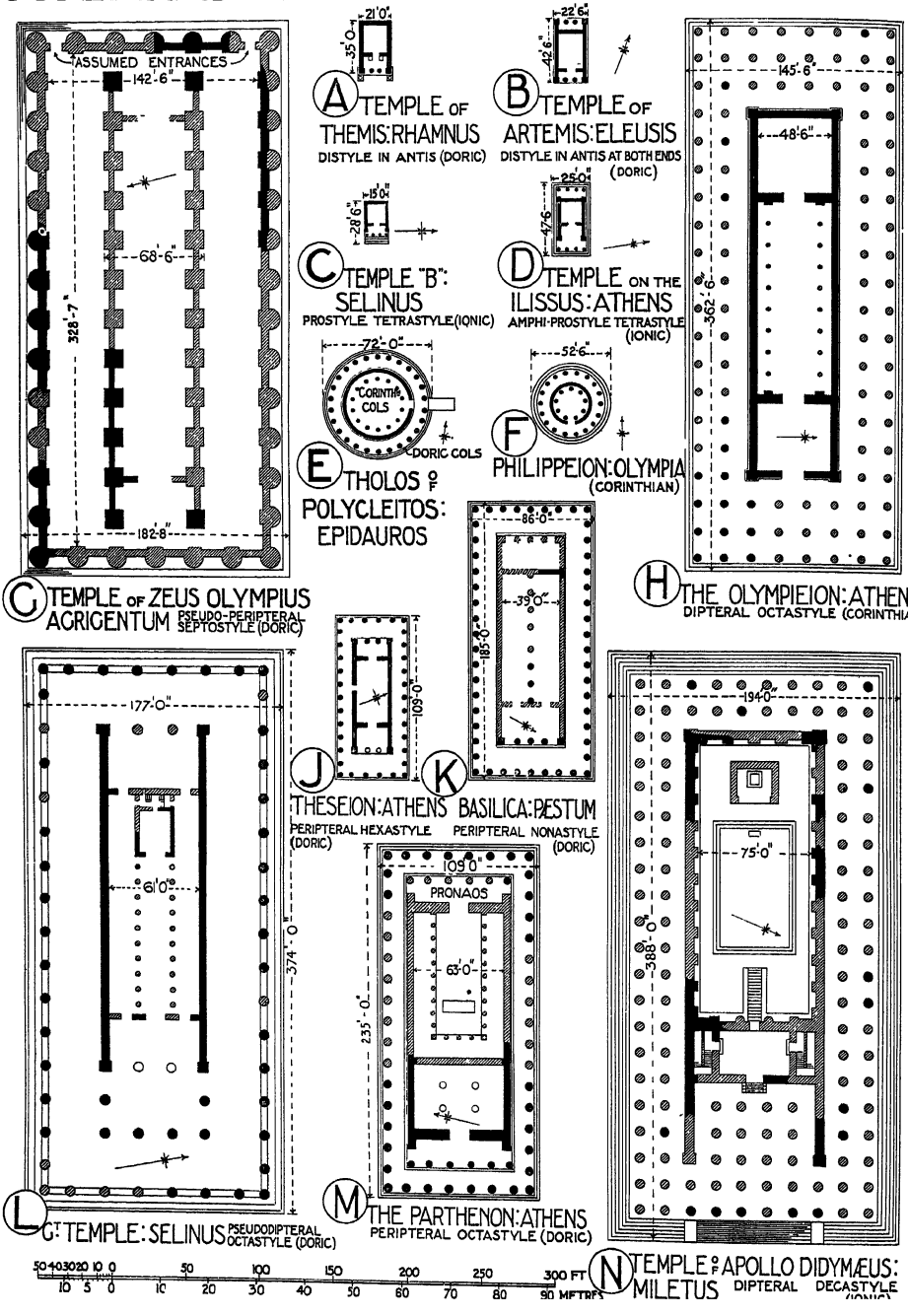


B SECTION FROM EAST TO WEST



C PLAN

COMPARATIVE PLANS OF GREEK TEMPLES



transparent Parian marble or alabaster roofing slabs, as well as by artificial illumination by oil lamps. Temples were occasionally "hypæthral," or partly open to the sky, but this system appears to have been reserved for the larger temples such as the Olympieion, Athens (p. 111) (see Vitruvius), and the Temple of Apollo Didymæus, near Miletus, as mentioned in Strabo (lib. xiv). The temple was the home or sacred dwelling of the local god, and so some authorities hold that the hypæthral opening in the centre of an ordinary Greek house was the prototype of that in the house of the divinity, and both alike were doubtless developed out of the smoke-hole of the primitive hut.

The comparative plans (p. 76) show the additions made to the simple statue chamber or naos, in order to form the larger and more imposing colonnaded temples. The various methods of arranging the columns give the special names to the forms of temples, and the nomenclature which follows is that of the great Roman architect, Vitruvius.

(i) Distyle in antis, i.e. with two columns between the antæ at one end, is the simplest form of temple. Ex.: Temple of Themis, Rhamnus (p. 76 A).

(ii) Distyle in antis at both ends, i.e. as (i) but at both ends of the building. Ex.: Doric Temple at Eleusis (p. 76 B).

(iii) Prostyle tetrastyle, i.e. with a front portico of four columns. Ex.: Ionic Temple at Selinus, Sicily (p. 76 C).

(iv) Amphi-prostyle tetrastyle, i.e. with both front and rear porticoes of four columns. Exs.: Ionic Temple on the Ilissus (pp. 76 D, 97 A); Temple of Nikè Apteros (p. 110 H).

(v) Peripteral circular, i.e. with a ring of columns surrounding a circular naos. Exs.: Philippeion, Olympia (pp. xxxvi B, 76 F); the Tholos, Epidauros (p. 76 E).

(vi) Peripteral hexastyle, i.e. a rectangular temple surrounded by columns, six of which form porticoes at each end. Exs.: Theseion, Athens (pp. 76 J, 85 L); Temple of Poseidon, Pæstum (p. 82 G); Temple of Apollo, Bassæ (p. 91 E).

(vii) Peripteral octastyle, i.e. similar to the last-named but with eight columns to each portico. Ex.: Parthenon, Athens (pp. 76 M, 87 G).

(viii) Peripteral nonastyle (enneastyle), i.e. with nine columns to each portico—an unusual arrangement. Ex.: "Basilica," Pæstum (pp. 76 K, 82 H).

(ix) Pseudo-peripteral, a temple with half-columns attached to the naos walls, a favourite form adopted by the Romans (p. 141). Ex.: Temple of Zeus, Agrigentum (pp. 76 G, 82 K).

(x) Dipteral octastyle, i.e. a temple surrounded by double rows of columns and with two ranges of eight at either end. Exs.: Olympieion, Athens (p. 76 H); Temple of Artemis, Ephesus (p. 103 B).

(xi) Pseudo-dipteral octastyle, i.e. a similar plan with the inner range of columns omitted. Ex.: Great Doric Temple of Selinus, Sicily (p. 76 L).

(xii) Dipteral decastyle, similar to No. (x) but with ranges of ten columns at each end. Ex.: Temple of Apollo Didymæus, Miletus (p. 76 N). The Great Temple at Baalbek (p. 151 F) is a Roman example of this type.

(xiii) Irregular planning. Ex.: Erechtheion, Athens (p. 98 F).

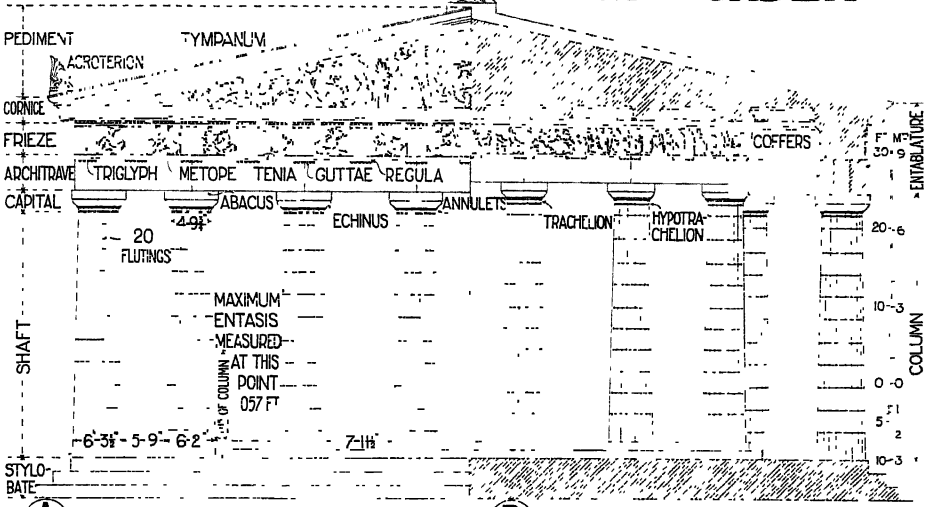
All these temples were in one or other of the three "Orders" of Greek architecture—Doric, Ionic, and Corinthian—which are now described in detail with their principal examples.

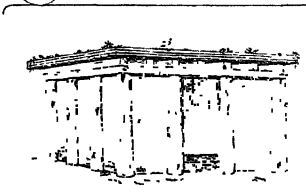
The Doric Order

The Doric Order (p. 79), the most sturdy, is traced by some to an Egyptian prototype, as exemplified at Beni Hasan (pp. 17 B, 18 L, M, P). The origin of the column has given rise to much speculation, but it was probably evolved quite naturally and independently of an Egyptian prototype by splaying the four angles of a square pillar, thus forming an octagonal column, which was further developed into a sixteen-sided column by again splaying the eight edges already obtained, and finally these edges or arrises were rendered more prominent by hollowing out the flat sides between them into flutes. Perrot and Chipiez discuss the origin of this column and its entablature, and suggest that various features of the Order were derived from the simple timber architecture of Mycenæan palaces (p. 79 F). According to this attractive theory, which is convincing to many people, the triglyphs represent the ends of beams resting on the architrave, the mutules the ends of sloping rafters, and the guttæ the wooden pegs which held the timbers together. These writers, however, suggest no origin for the capital, and do not entertain the theory of the derivation from the tombs at Beni Hasan in Egypt. An early form of hut with rough log supports and flat roof (p. 79 C), and a later type with columns and square abacus, and an entablature of architrave, frieze with triglyphs, overhanging cornice, and sloping roof (p. 79 D), are both suggestive of the origin of the structure of Greek temples. Viollet-le-Duc held a decided opinion that the Orders of Greek architecture involved an original stone treatment. He was unable to conceive how the Doric capital could have been derived from a timber form, and he considered the triglyphs in the frieze not as the petrified ends of wooden beams—which in any case could not be seen on all four sides of a building, and which would be very difficult to flute across the grain of the wood—but as original stone uprights, with fluting like columns to express their function of vertical support. He observed that the form of the entablature of the Doric Order could be adapted with unimportant variations to stone as well as to wood, without falsifying the form of the structure, and he could not admit that the Doric Order was evolved from a timber prototype. Garbett goes so far as to call the wooden theory an "insolent libel," and asserts that it is disproved by two facts, for not only is the inclination of the soffit of the stone cornice observed on the ends as well as on the sides of the building, but it does not coincide with the inclination of the roof. Mr. H. H. Statham rejects the timber theory as far as the Doric column and capital are concerned, and points out that its adherents have to explain: (i) that the greater the age of the approximately dated examples, the thicker the columns, while the reverse would have been the case had the original forms been of wood; (ii) that the characteristic "echinus" moulding under the "abacus" of the Doric column is essentially a stone form, and not easily worked in wood.

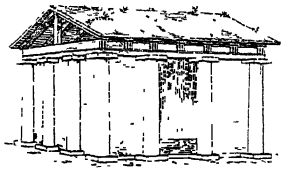
The **Doric Column** (pp. 79 A, 80) stands without a base directly on a stylobate, usually of three steps, and, including the capital, has a height of from 4 to 6½ times the diameter at the base. The circular shaft, diminishing at the top from ¾ to ⅘ of this diameter, is divided as a rule into 20 shallow flutes or channels separated by sharp "arrises," but sometimes there are 12, as at Assos, 16, as at Sunium, 18, as in the Greek Temple at Pompeii, or 24, as at Pæstum (p. 80 C). The division into 20 flutes seems, however, to have been preferred in order that a projection or arris might come under each of the angles of the square abacus above, and at the same time allow of a flute

EVOLUTION OF DORIC ORDER

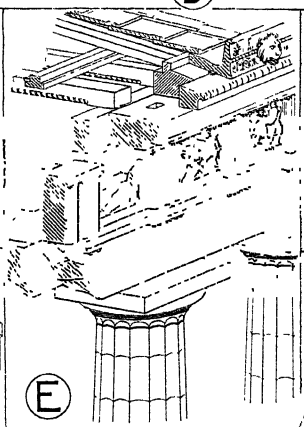




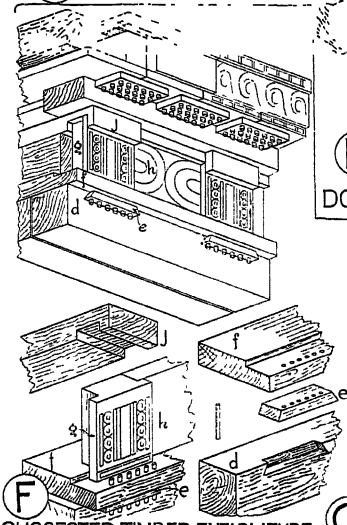
C EARLY FORM OF HUT



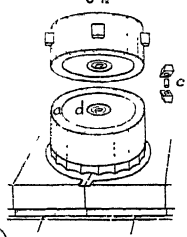
D LATER FORM OF HUT



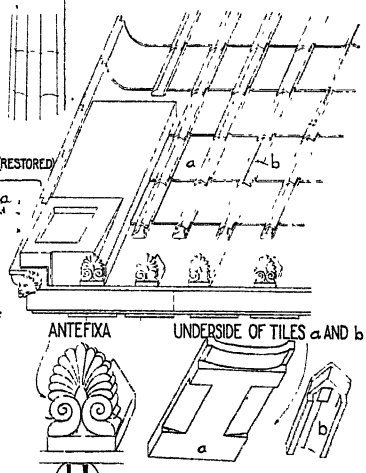
E DORIC ENTABLATURE (RESTORED)



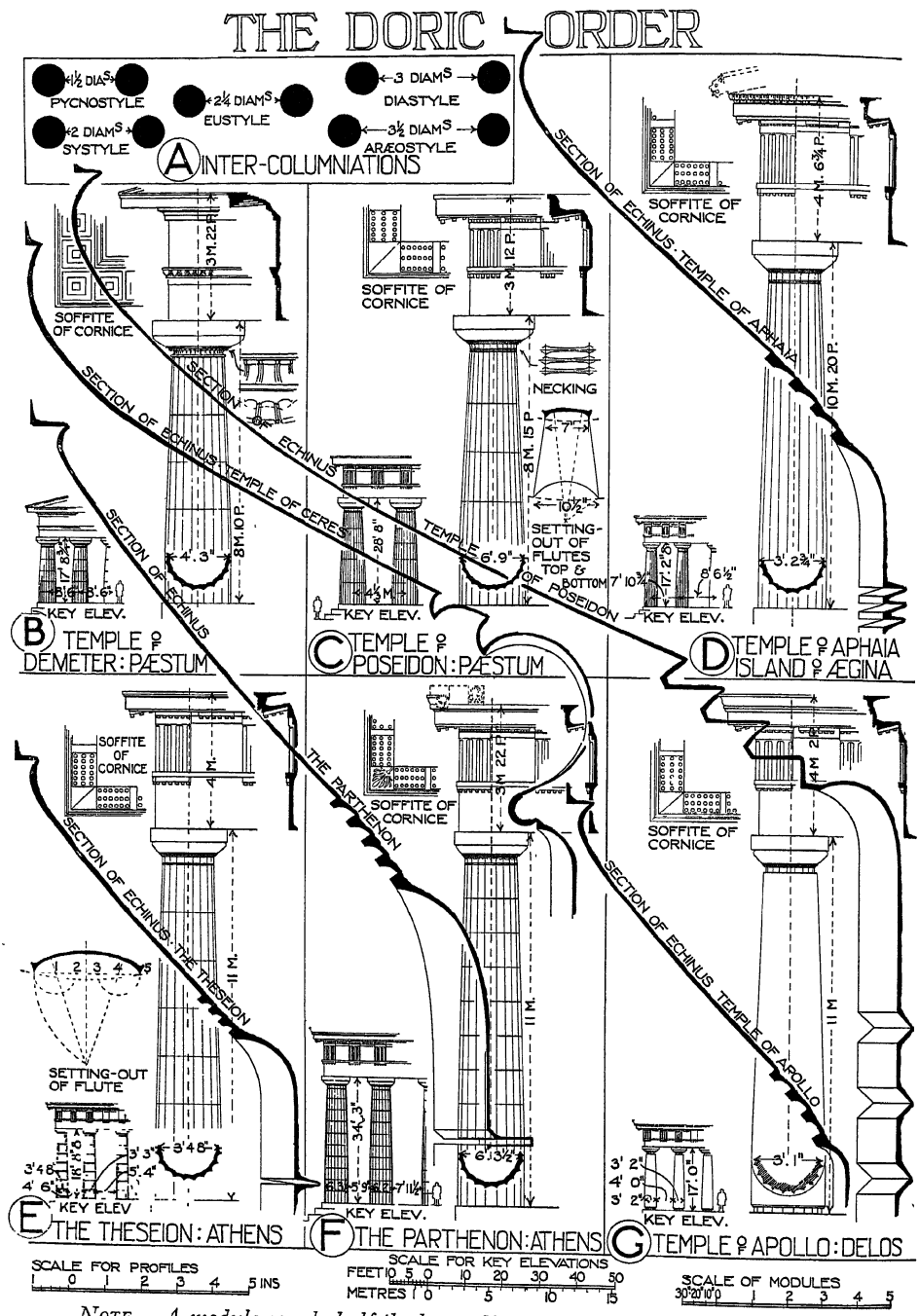
F SUGGESTED TIMBER ENTABLATURE



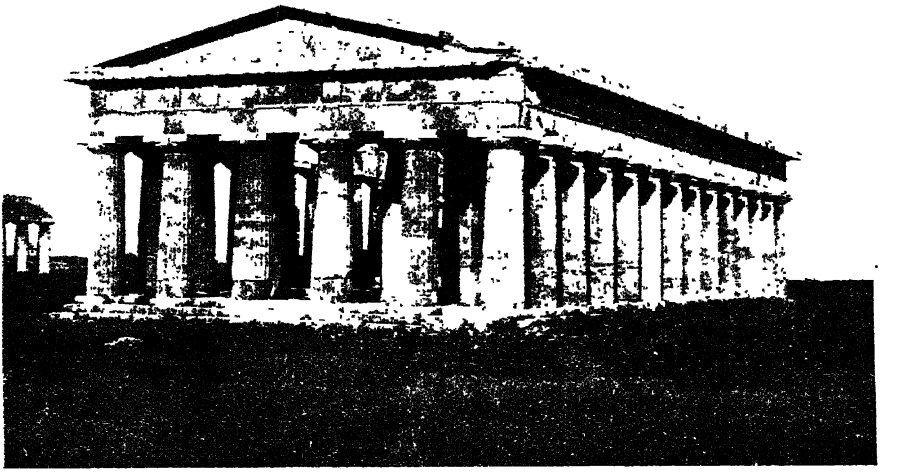
G JOINTING OF COLUMNS



H ANGLE OF PARTHENON (RESTORED)



Note.—A module equals half the lower diameter and is divided into 30 parts

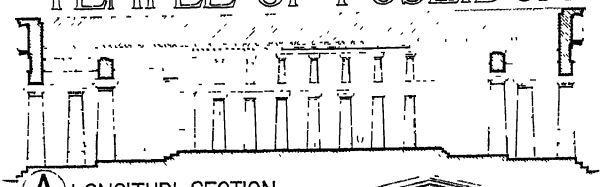


A. Temple of Poseidon, Paestum

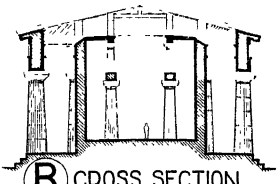


B. Temple of Poseidon, Paestum, showing superimposed Columns

TEMPLE OF POSEIDON: PAESTUM.



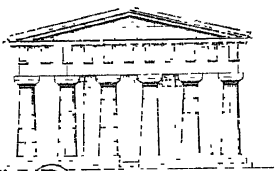
A LONGITUDE SECTION



B CROSS SECTION



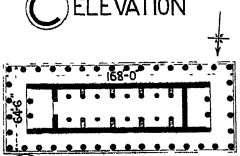
C ELEVATION



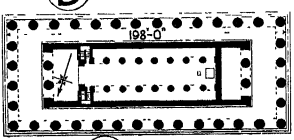
D ELEVATION



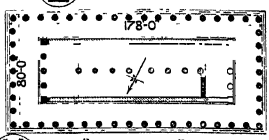
E ELEVATION



F THE HERAION · OLYMPIA

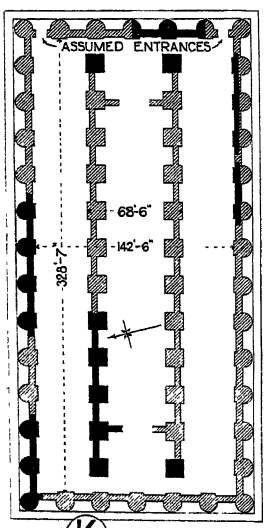


G PLAN

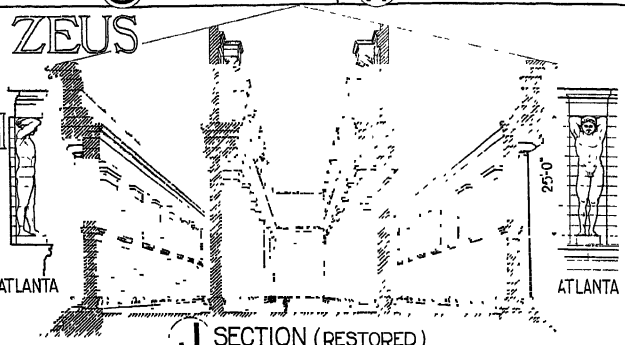


H THE "BASILICA": PAESTUM

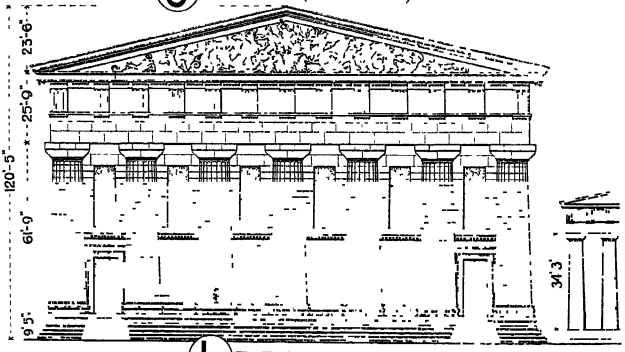
TEMPLE OF ZEUS OLYMPIUS: AGRIGENTUM



K PLAN



J SECTION (RESTORED)



L ELEVATION (RESTD)

PARTHENON

SCALE FOR PLANS

10 0 10 20 30 40 50 60 70 80 90 100 150 200 FEET

5 0 5 10 20 30 40 50 60 METRES

SCALE FOR ELEVATIONS

10 5 0 10 20 30 40 50 60 70 80 90 100 FEET

5 0 5 10 15 20 25 30 METRES

in each centre of the column as seen from the front, back, or sides, and no other number of flutes between twelve and twenty-eight complies with this Greek constructive practice of placing projections over each other. The shaft has normally a slightly convex profile called the " entasis," to counteract the hollow appearance which results from straight-sided columns (p. 126 D). In early works this is often too obtrusive (e.g. Basilica, Pæstum), but where it is omitted altogether (e.g. Corinth) the effect is lifeless, and the happy mean may be seen in the Parthenon (p. 89). The shaft terminates in the " hypotrachelion " usually formed of three grooves in archaic examples, and later of one groove, and immediately above it is the continuation of the fluted shaft known as the " trachelion " or necking. The distinctive capital consists of annulets, echinus, and abacus. The annulets or horizontal fillets, from three to five in number, stop the vertical lines of the arrises and flutes of the shaft. The echinus (Gk., sea-urchin), probably so called by Vitruvius on account of its resemblance to the shell of a sea-urchin, is also somewhat similar in outline to a human hand spread to support a book, and varies according to the date of the building ; in the earlier temples at Pæstum (p. 80 B, C) it has considerable projection, and is fuller in outline, approximating to a parabolic section ; whereas in later examples such as the Theseion (p. 80 E) and the Parthenon (p. 80 F) the curve approaches a straight line, and approximates to a hyperbolic curve. The abacus is a square, unmoulded slab which crowns the echinus and forms the topmost member of the capital.

The **Doric entablature** (p. 79 A, E), usually about one-quarter the height of the Order, is supported by the columns, and has three main divisions : (*a*) The architrave or principal beam is of considerable depth with its vertical face in one plane ; whereas in the Ionic and Corinthian Orders it is usually stepped in three planes. Separating this from the frieze is a flat moulding called the tenia, and under this, at intervals corresponding to the triglyphs, is a narrow band called the regula with six guttæ or small conical drops. (*b*) The frieze is formed of triglyphs with three upright channels which alternate with metopes or square spaces, often ornamented with groups of fine sculpture, as in the Parthenon (p. 95). The triglyphs are placed at equal distances apart, and come immediately over the centre of each column, and there was usually one over each intercolumniation. At the angles of the temple, however, two triglyphs meet with a bevelled edge, and the intercolumniation between the two outer columns is less by about half a triglyph in width than that of the others. (*c*) The cornice, the upper or crowning part, consists of cymatium and bird's-beak moulding beneath which is the corona or vertical face. The soffit or underside of the cornice has an inclination approximating to the slope of the roof, and has flat blocks or mutules, which suggest the ends of sloping rafters. These occur above each triglyph and each metope, and are usually ornamented with eighteen guttæ, in three rows of six each.

The principal Doric temples were in Greece, Sicily, and South Italy, as set forth below.

DORIC TEMPLES IN GREECE

The Heraion, Olympia (p. 84)	B.C. 700
Temple of Athena, Corinth	B.C. 650
Temple of Poseidon, Paros	B.C. 6th century
Temple of Zeus, Olympia (p. 89)	B.C. 472–469
The Theseion, Athens (p. 89)	B.C. 465 (?)
Temple of Aphaia, Ægina (p. 89)	B.C. 470–450

The Parthenon, Athens (p. 89)	B.C. 454–438
Temple of Poseidon, Sunium	B.C. 440
Temple of Apollo Epicurius, Bassæ (p. 95)	B.C. 430
Temple of the Mysteries, Eleusis	B.C. 453–310
The Tholos, Epidauros (p. 76 E)	B.C. 4th century
Temple of Themis, Rhamnus (p. 76 A)	B.C. 4th century
Temple of Apollo, Delos (p. 80 G)	B.C. 300

DORIC TEMPLES IN SICILY AND SOUTH ITALY

The Great Temple, Selinus (p. 76 L)	B.C. 610–509
The "Basilica," Pæstum (p. 84)	B.C. 550
Temple of Demeter, Pæstum (p. 80 B)	B.C. 550
Temple of Concord, Agrigentum	B.C. 550
Temple of Juno, Agrigentum	B.C. 550
Temple of Poseidon, Pæstum (p. 84)	B.C. 500
Temple of Athena, Syracuse	B.C. 6th century
Temple of Egesta, Sicily	B.C. 5th century
Temples at Selinus (p. 76 C)	B.C. 628–410
Temple of Zeus Olympius, Agrigentum (p. 84)	B.C. 480

The **Heraion, Olympia** (B.C. 700) (p. 82 C, F), dedicated to Hera, is believed to be the most ancient of all Greek temples hitherto discovered. It stands on a stylobate of two steps, measuring 168 ft. by 64 ft. 6 ins. The naos is very long in proportion to its width, and has on either side a range of eight columns, alternately connected to the naos wall by short transverse walls. The peristyle columns, 17 ft. high, vary much in diameter, and are either monolithic or built up in drums. Pausanias mentions that in the second century two columns in the opisthodomos were of oak, and this suggests that all the columns may have been originally timber, and that as they decayed they may have been replaced by stone columns (p. xxxvi B).

The **"Basilica," Pæstum** (B.C. 550) (p. 82 E, H), in reality a temple, is a unique example, being peripteral nonastyle, 178 ft. by 80 ft., with nine columns to each portico and central line of eight columns in the naos, and is therefore believed to have been dedicated to two deities. The stylobate supports travertine columns, whose fluted shafts have a marked entasis, and support widely projecting capitals, peculiar in having a decorative treatment of the trachelion.

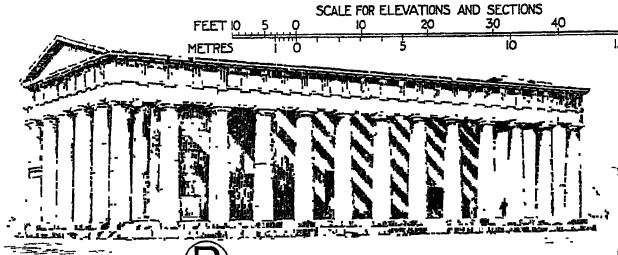
The **Temple of Poseidon, Pæstum** (B.C. 500) (pp. 80 C, 81, 82 A, B, D, G), is one of the best preserved of all early Greek temples. It is peripteral hexastyle, measuring 197 ft. by 80 ft., and is built of coarse travertine stone in which are fossil plants and aqueous weeds, and the stone was originally covered with fine stucco. It has a stylobate of three steps, supporting columns 28 ft. high with a lower diameter of 6 ft. 6 ins., and an upper of 4 ft. 9 ins., which gives a ratio of height to lower diameter of 4·3 to 1—a very sturdy proportion. The shafts are fluted, and have an entasis, and are surmounted with capitals of pleasing outline (p. 80 C), supporting an entablature and sculptureless pediment. This temple is an exceptionally interesting one in being the only existing example with internal colonnades (p. 81 B) of Doric columns, still surmounted by smaller Doric columns, which it is believed was a usual method of supporting the wooden roof.

The **Temple of Zeus Olympius, Agrigentum** (Girgenti) (B.C. 480) (pp. 76 G, 82), of which Theron was the architect, is of exceptional design, and ranks as second in size among Greek temples. It is of coarse stone originally covered with marble-dust cement, pseudo-peripteral septastyle in plan with seven half-columns on the front and fourteen on each side. These external attached half-columns are of great size, 13 ft. in diameter, and have corre-

THE THESEION : ATHENS



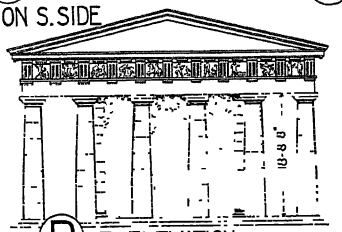
A 3 METOPES ON S. SIDE



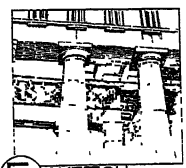
B EXTERIOR FROM S.W.



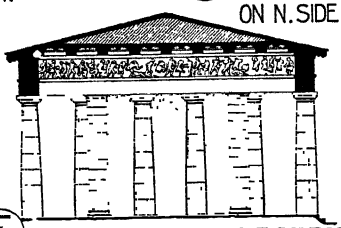
C 3 METOPES ON N. SIDE



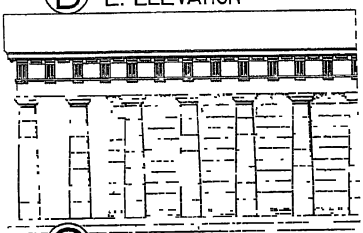
D E. ELEVATION



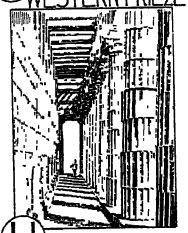
E SKETCH OF WESTERN FRIEZE



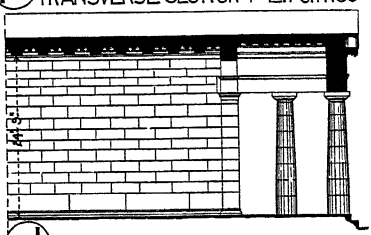
F TRANSVERSE SECTION OF E. PORTICO



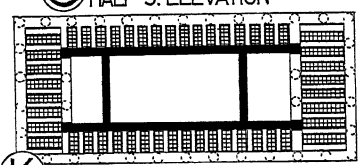
G HALF S. ELEVATION



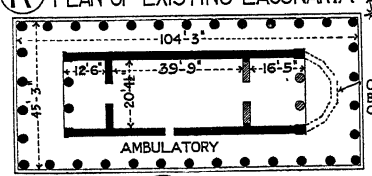
H AMBULATORY



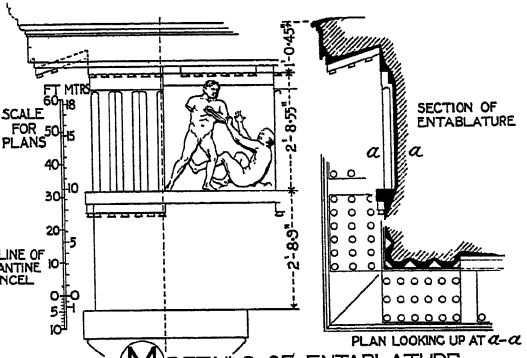
J HALF LONG. SECTION OF AMBULATORY



K PLAN OF EXISTING LACUNARIA



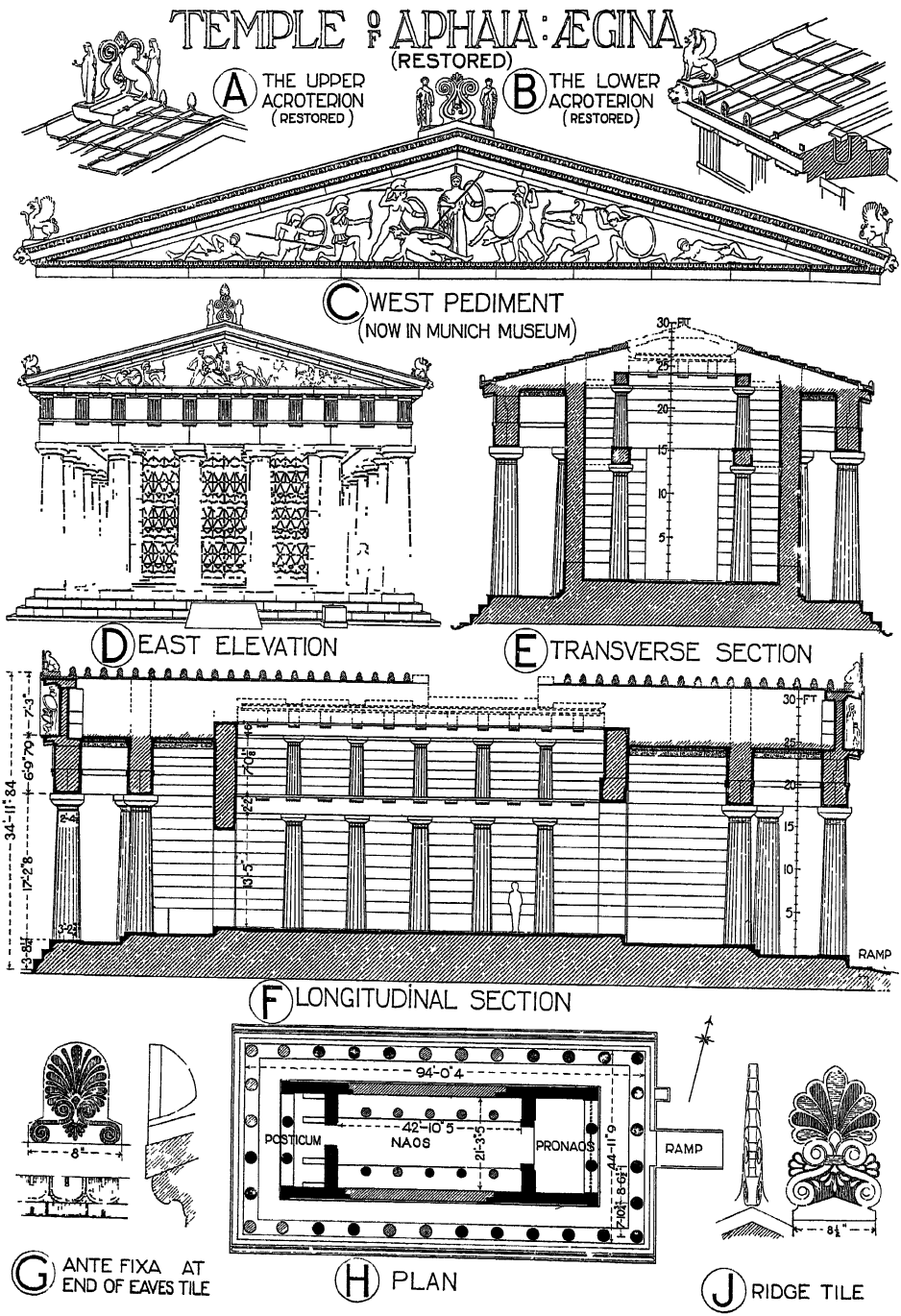
L PLAN



M DETAILS OF ENTABLATURE



N SCULPTURED FRIEZE OF W. PORTICO (BATTLE OF THE CENTAURS AND LAPITHÆ)


TEMPLE OF APHAIA: ÆGINA
(RESTORED)
A THE UPPER ACROTERION (RESTORED)
B THE LOWER ACROTERION (RESTORED)
C WEST PEDIMENT (NOW IN MUNICH MUSEUM)
D EAST ELEVATION
E TRANSVERSE SECTION
30 FT
25
20
15
10
5
F LONGITUDINAL SECTION
RAMP
94'-0"4
42'-10"5
NAOS
POSTICUM
PRONAOS
RAMP
G ANTE FIXA AT END OF EAVES TILE
H PLAN
J RIDGE TILE

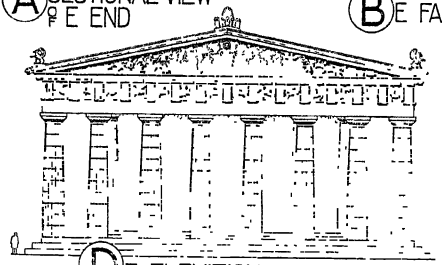
THE PARTHENON: ATHENS



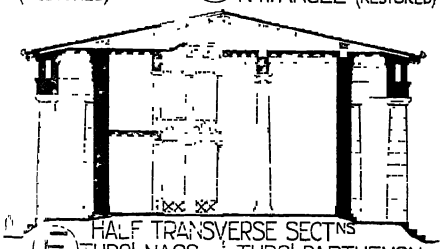
A SECTIONAL VIEW OF E END

B E FACADE (RESTORED)

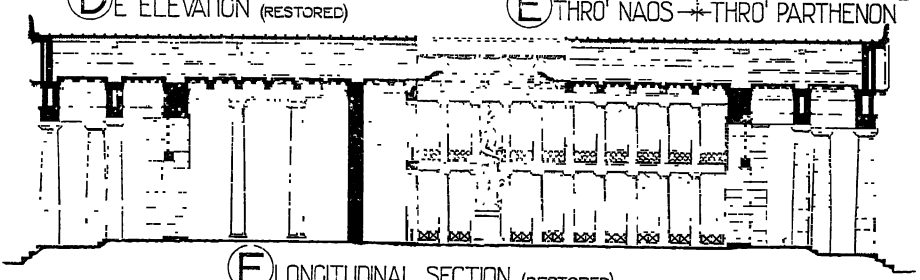
C N.W. ANGLE (RESTORED)



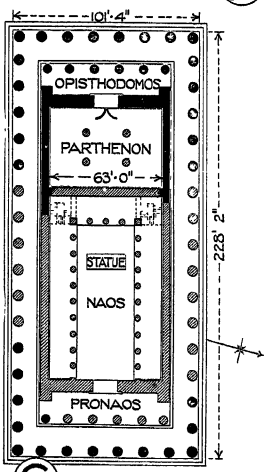
D E ELEVATION (RESTORED)



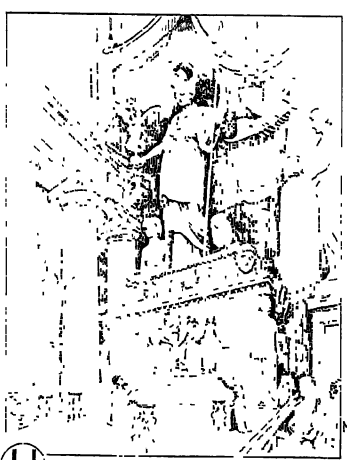
E HALF TRANSVERSE SECTNS THRO' NAOS + THRO' PARTHENON



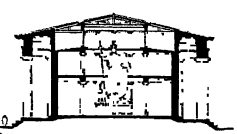
F LONGITUDINAL SECTION (RESTORED)



G PLAN (RESTORED)



H STATUE OF ATHENA (RESTORED)



J METHOD OF LIGHTING BY CLEARSTORY (FERGUSSON)



K METHOD OF LIGHTING BY SKYLIGHT (BÖTTICHER)

SCALE FOR ELEVATIONS & SECTIONS

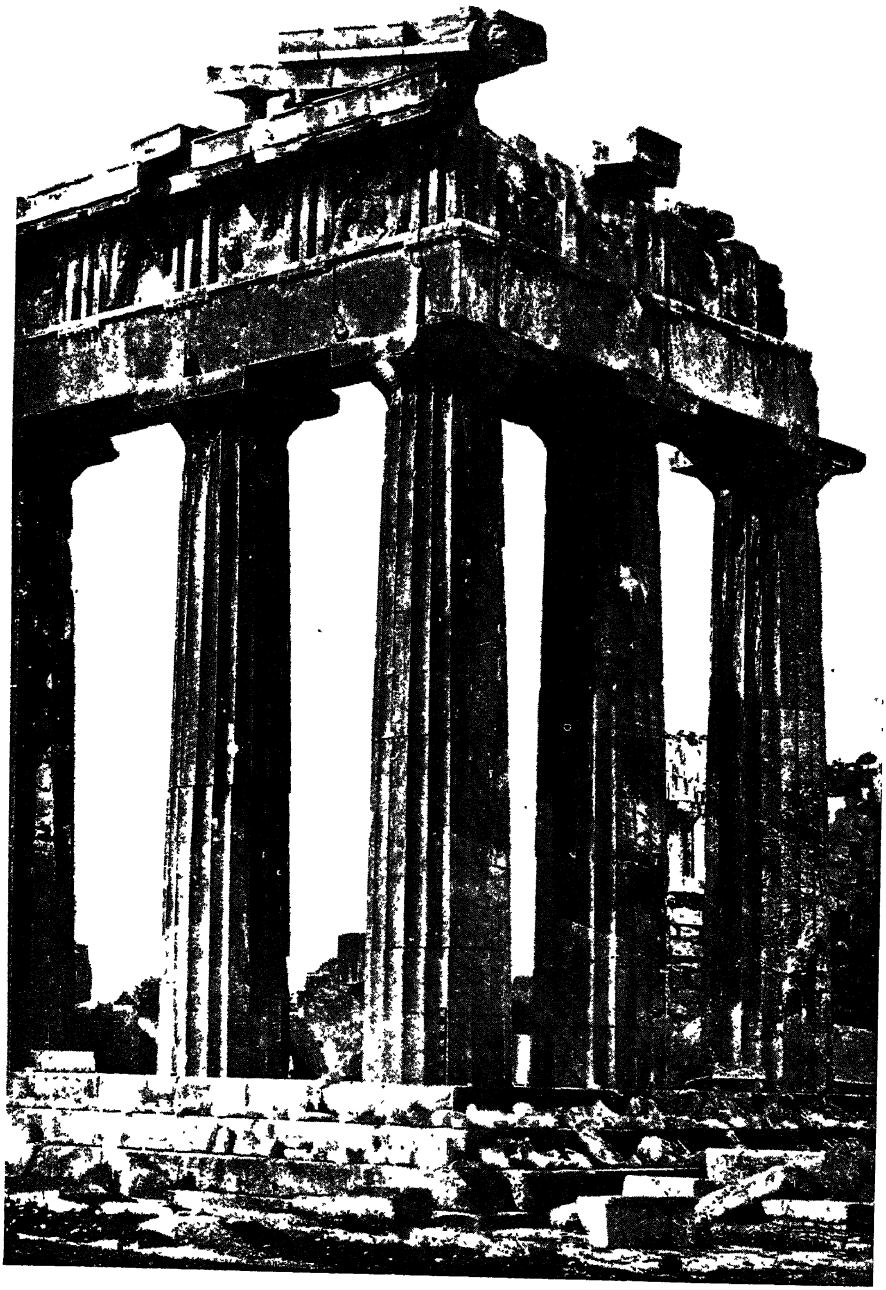
10 FT. 0 10 20 30 40 50 60

MTRS 1 0 5 10 15

SCALE FOR PLAN & LIGHTING SECTNS.

FT 10 0 50 100

METRES 0 5 10 15 20 25 30



THE PARTHENON, ATHENS: VIEW OF ANGLE

sponding pilasters on the interior. The large triple naos is believed to have had windows high in the wall, but the building was never completed. The illustrations are from Cockerell's restorations, but the position of the Atlantes figures has never been satisfactorily settled. Owing to its immense size, Greek structural principles had to be sacrificed, for half-columns, echinus, abacus, and even the architrave were all built up of small pieces of stone, and furthermore the architrave itself is supported, not only by the half-columns, but by the intervening screen wall.

The **Temple of Zeus, Olympia** (B.C. 472–469) (p. xxxvi B), designed by Libon, is peripteral hexastyle with thirteen columns on each side, equal to those of the Parthenon in height, but greater in diameter. Pæonius and Alcamenes made this temple specially famous by their sculptured pediments, and in the Museum on the site there are large fragments pieced together in the positions indicated by the subjects and the relative size and attitude of the figures.

The **Theseion, Athens** (? B.C. 465) (pp. 85, 92 A), is now generally believed to have been the Temple of Hephæstos; and although it is the best-preserved Doric temple in Greece, both its date and name are matters of doubt. It stands on an artificial foundation of limestone blocks, and is built of Pentelic marble. In Mediæval times the temple was converted into a church, and an apse was added at the east end. It is peripteral hexastyle on plan, with thirteen columns on each flank, and stands on a stylobate of two steps (p. 85 L). The naos is only about 20 ft. wide, and required no internal columns. The existing lacunaria in the ambulatory, especially at the eastern end, still retain some of the original colouring (p. 85 H, K). The metopes, in high relief, at the eastern end of the north and south façades represent the exploits of Theseus (p. 85 A, C). Under the eastern portico (p. 85 F) is the sculptured frieze, 2 ft. 8 ins. high, representing a contest in the presence of six seated divinities, while the sculptured frieze of the western portico represents the battle of the Centaurs and Lapithæ (p. 85 E, N). The pediments originally had sculptures, but none remain.

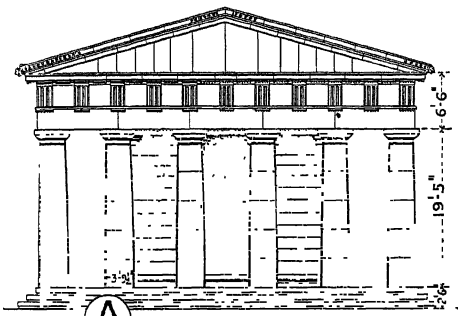
The **Temple of Aphaia, Ægina** (B.C. 470–450) (p. 86) belongs to the peripteral hexastyle class, and some columns are monolithic and some built in drums. The soft yellow limestone of which it was built was originally coated with thin stucco, and thus the temple is well preserved. The naos had two rows of five columns, probably supporting smaller columns which helped to support the roof (p. 86 E, F, H). In the floor of the pronaos there remain square holes into which a metal screen was fixed, and the posticum is curiously divided by two projecting blocks of masonry. Frieze sculptures, cymatium moulding, and roof slabs were in Parian marble, and the whole entablature glowed with colour, while elaborately carved acroteria and ridge tiles finished off the roof ends (p. 86 A, B, C). The pediments contained remarkable sculptures of the archaic period (now at Munich), of which Cockerell's restorations are shown (p. 86 C, D), but later authorities have suggested different arrangements of the figures. There are excellent reproductions in the British Museum, where the suggested colouring is applied to the various mouldings. The west pedimental group, which is the best preserved, represents the struggle between Greeks and Trojans over the body of Patroclos, which lies at the feet of Athena (p. 86 C). The eastern elevation as restored has the metal grille to the pronaos, and the sculptured pediment which probably represented an earlier expedition against Troy (p. 86 D).

The **Parthenon, Athens** (B.C. 454–438) (pp. 75, 79, 87, 88) was erected on the Acropolis, south of the old Temple of Athena (pp. iv, 75) in the time

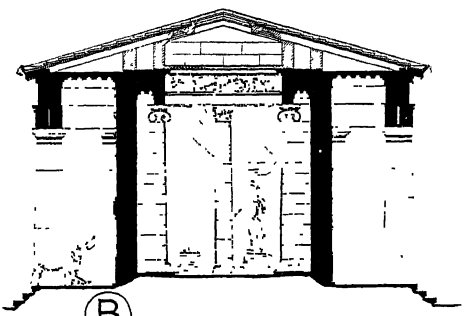
of Pericles, and dedicated to Athena Parthenos, the virgin Athena. Ictinus and Callicrates were the architects, and Pheidias was the master sculptor. The temple is peripteral octastyle on plan, with seventeen columns on the flanks, and stands on a stylobate of three steps, which measures 101 ft. 4 ins. by 228 ft. 2 ins. along the top, i.e. a relation of breadth to length of about 4 to 9. Each of the steps is about 1 ft. 8 ins. high and 2 ft. 4 ins. wide, and as these were too steep to ascend with comfort intermediate steps were provided at the centre of the east and west ends (p. 87 A). The principal doorway on the east led into the naos, which, as it measured 100 Attic ft. in length, was called the " Hecatompedon." The naos, 63 ft. wide, had two rows of ten Doric columns, 3 ft. 8 ins. in diameter, with sixteen flutes, as could be seen by the marks of their bases on the marble paving, while three columns across the western end carried the aisle round three sides of the naos. To the west of the naos was the Parthenon or virgin's chamber, from which the temple took its name, and which differentiates this temple from most others. It appears to have been used as the hieratic treasury, and was entered from the opisthodomos by a large doorway corresponding to the eastern one, and its roof was supported by four Ionic columns (p. 87 E, F). The naos and virgin's chamber were enclosed by walls about 4 ft. thick, and the whole temple was encircled by an ambulatory 9 ft. wide on the sides and 11 ft. in the front and rear. The pronaos and opisthodomos, each about 60 ft. by 12 ft., were planned in a somewhat unusual manner with six columns about $5\frac{1}{2}$ ft. in diameter and 33 ft. high, forming a prostyle portico on an upper stylobate of two steps. Both pronaos and opisthodomos were used as treasuries, and, in order to render them secure, lofty metal grilles extending from floor to roof were fixed between the columns, with the entrance gates in the central intercolumniation. The naos columns, as in the Temple of Poseidon, Pæstum (p. 81 B), probably supported an upper row of smaller Doric columns, carrying the roof timbers. The method of lighting the naos is uncertain, and theories have already been discussed (p. 74). Near the western end of the naos stood the famous statue of Athena Parthenos, one of the most marvellous works of Pheidias, representing Athena fully armed with spear, helmet, ægis, and shield, supporting a winged Victory in her right hand (p. 87 H). It was a " chryselephantine " or gold and ivory statue, about 40 ft. high including pedestal, and the gold plates which formed the drapery, armour, and accessories over the wooden core were detachable, so that they could be removed in case of danger. The face, hands, and feet were of ivory, and the eyes of precious stones.

The most prominent external features are the fluted marble columns of the peristyle, which rest on the stylobate (pp. 80 F, 126 C). The thirty-two columns still standing are about 6 ft. 2 ins. in diameter at the base and about $5\frac{1}{2}$ times this diameter or 34 ft. 3 ins. high, and the diameter diminishes to 4 ft. $9\frac{3}{4}$ ins. under the annulets, while the angle columns are 6 ft. $3\frac{1}{2}$ ins. in diameter at the base and 4 ft. 11 ins. under the annulets. The columns support an entablature about 11 ft. high (p. 126 C), which has the usual divisions of architrave, frieze, and cornice (pp. 79 A, 87 C). The architrave was ornamented with bronze shields, probably presented by Alexander the Great in B.C. 334, and with dedicatory inscriptions in bronze letters. The joints of the marble roof-slabs above the cornice were masked by carved antefixæ, which formed an ornamental cresting along the sides of the building (pp. 79 H, 87 C). The pediments, which have an inclination of $13\frac{1}{2}$ degrees, terminated the roof at each end of the temple, and had acroteria of

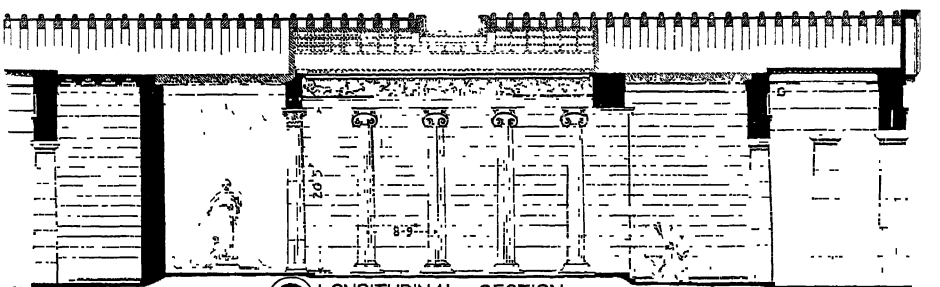
TEMPLE OF APOLLO EPICURIUS : BASSÆ



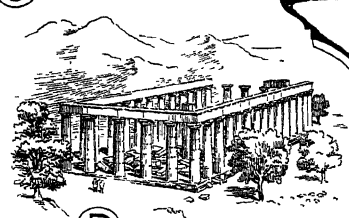
A NORTH ELEVATION



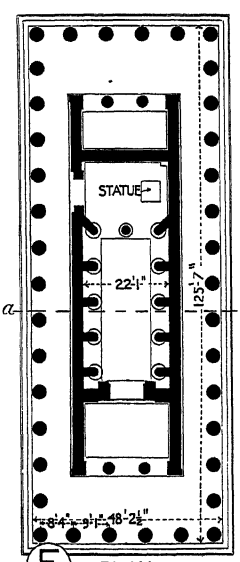
B SECTION ON a-a



C LONGITUDINAL SECTION



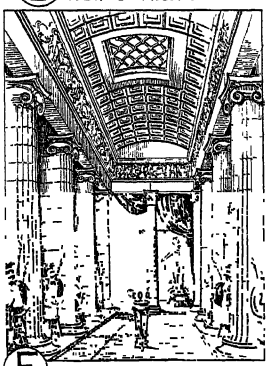
D RUINS FROM N



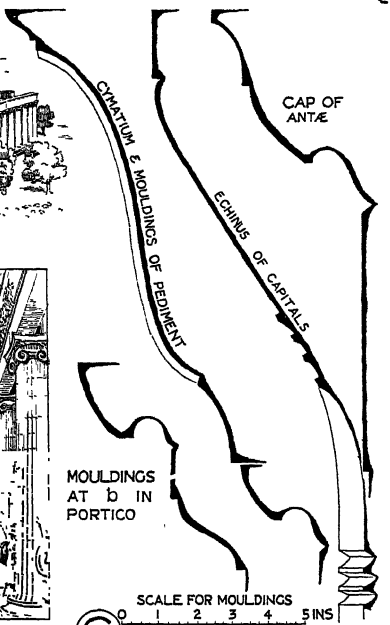
E PLAN

SCALE FOR PLAN
10 5 0 10 20 30 40 FT
1 0 5 10 12 M^TRS

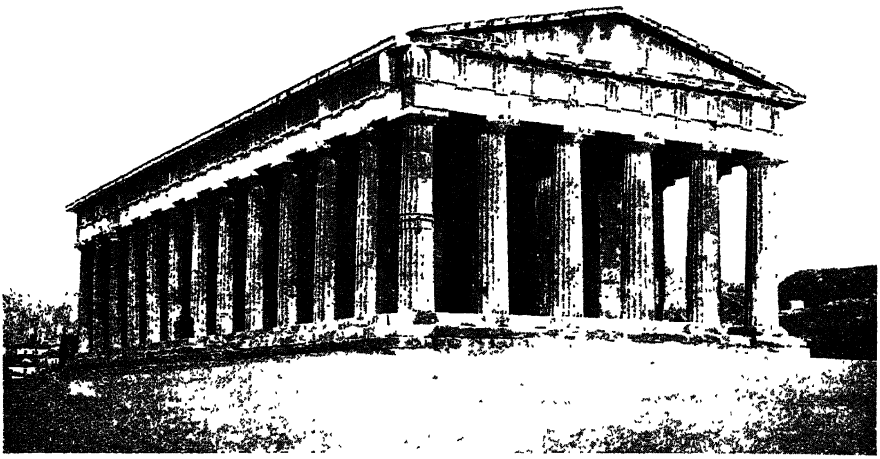
SCALE FOR ELEVATIONS & SECTIONS
M^TRS 5 4 3 2 1 0 1
20 FT 10 0 5 10



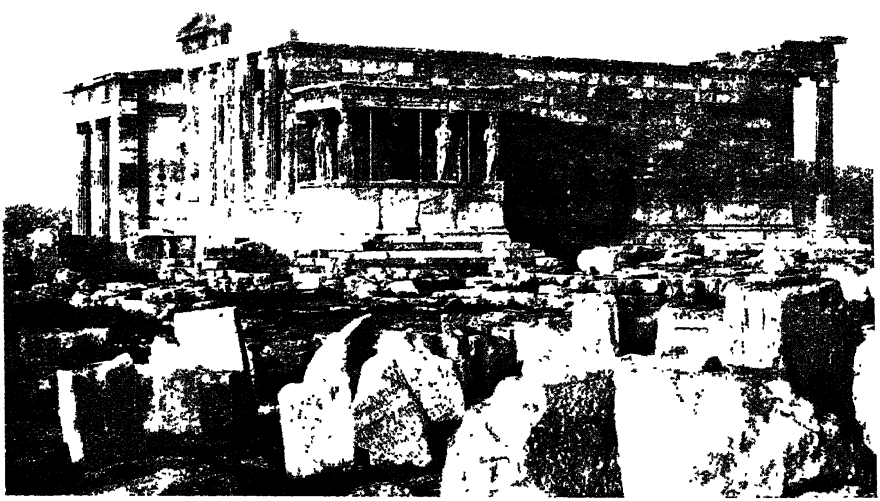
F INTERIOR (RESTORED)



G MOULDINGS

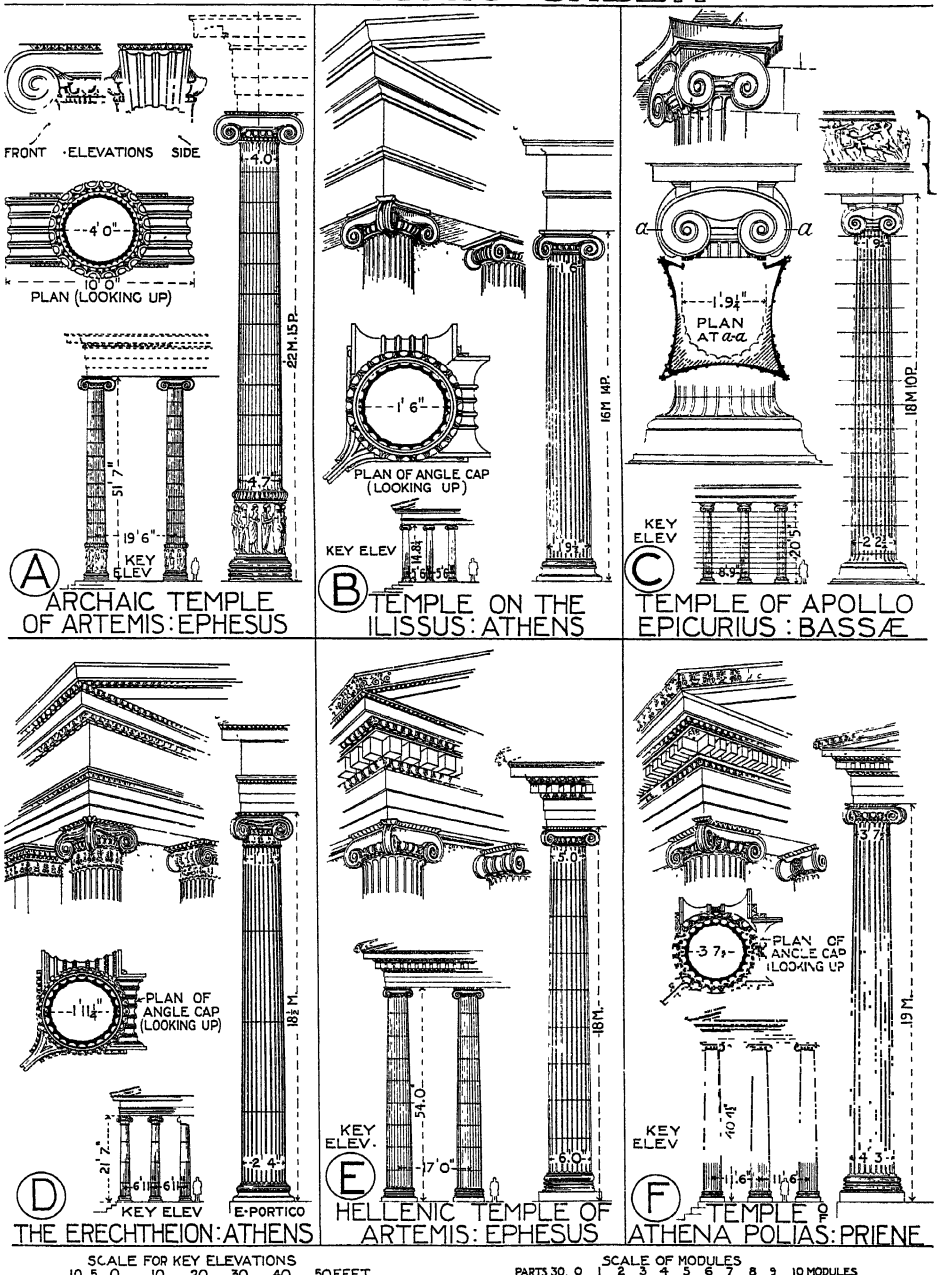


A THE THESEION, ATHENS



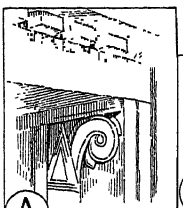
B. THE ERECHTHEION, ATHENS

THE IONIC ORDER



NOTE.—A module equals half the lower diameter and is divided into 30 parts

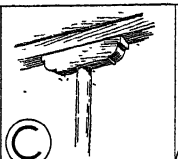
THE IONIC VOLUTE



A VOLUTE FROM TOMB CYPRUS



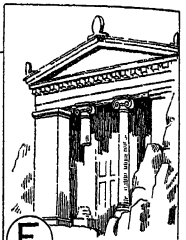
B EGYPTIAN BLUE LOTUS



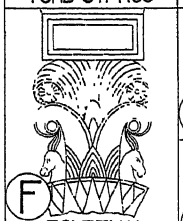
C BRACKET CAP PATIO: CORDOVA



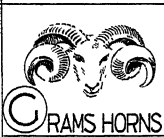
D NAUTILUS SHELL



E LYCIAN TOMB



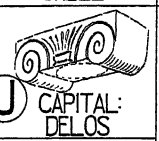
F EGYPTIAN WALL PAINTING



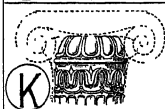
G RAMS HORNS



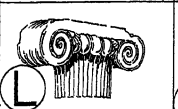
H VASE PAINTG. CYPRUS



J CAPITAL: DELOS



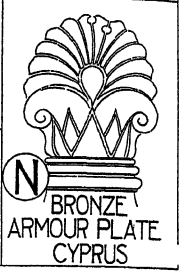
K CAPL: NAUKRATIS



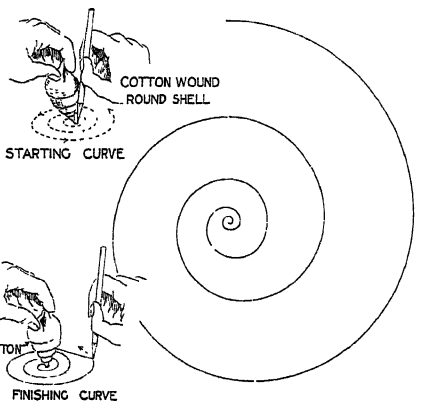
L CAPITAL. DELPHI



M CAPITAL: NEANDRIA

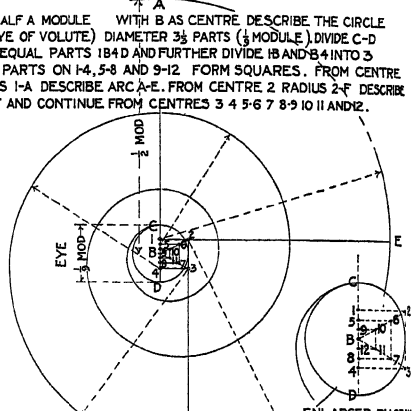


N BRONZE ARMOUR PLATE CYPRUS

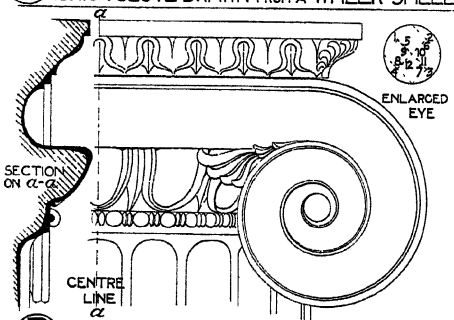


P IONIC VOLUTE DRAWN FROM A WHELK SHELL

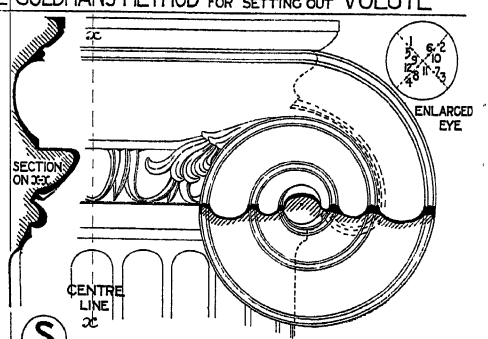
A-B = HALF A MODULE. WITH B AS CENTRE DESCRIBE THE CIRCLE C-D (EYE OF VOLUTE) DIAMETER 3⅓ PARTS (⅓ MODULE). DIVIDE C-D INTO 4 EQUAL PARTS 1 B 4 D AND FURTHER DIVIDE 1 B AND B 4 INTO 3 EQUAL PARTS ON 1-4, 5-8 AND 9-12. FORM SQUARES. FROM CENTRE 1 RADIUS 1-A DESCRIBE ARC A-E. FROM CENTRE 2 RADIUS 2-F DESCRIBE ARC E-F AND CONTINUE FROM CENTRES 3 4 5 6 7 8 9 10 11 AND 12.



Q GOLDMAN'S METHOD FOR SETTING OUT VOLUTE



R CAPITAL: PROPYLÆA: PRIENE



S CAPITAL: ELEUSIS

anthemion ornament at the apex and lower angles (pp. 79 A, 87 B, D). The peristyle ceiling was enriched with " lacunaria " and marble beams, and some at the western end are still in position. The optical refinements used in the different parts of the Parthenon have already been described (p. 71). The tympana in the pediments were filled with the finest sculpture of Pheidias. On the eastern pediment is represented the birth of Athena, and on the western the contest of Athena and Poseidon for the soil of Attica. The celebrated Panathenaic frieze was carved along the top of the exterior of the naos wall and just below the peristyle ceiling, and was taken across the east and west ends above the six columns of the pronaos and opisthodomos. It is 3 ft. 4 ins. high, in very slight relief of about 1½ ins., and the sculpture is treated in such a way as to be seen effectively by the light reflected up from the white marble pavement below, the shadows being thrown upwards (p. 87 A). It represents the Panathenaic procession (p. 125 H) which went every fourth year to the Acropolis to present the " peplos " to the goddess Athena, and it portrays the preparations of Athenian knights, and the great procession of cavalry, chariots, men with olive branches, musicians, youths, sacrificial animals, maidens with sacrificial vessels, magistrates and gods, all terminating in a great central group at the eastern end over the principal entrance to the temple, while the great chryselephantine statue of Athena in the naos was seen through the open door (p. 87 H). Out of an original total length of 525 ft., only 335 ft. are in existence. The western frieze, excepting the three central figures, is in its original position ; the greater portion of that belonging to the northern, southern, and eastern sides is in the British Museum, while the remainder, with the exception of eight fragments of the eastern frieze in the Louvre, is in the Athens Museum. The sculptured metopes (p. 125 K, M), about 4 ft. 5 ins. square, numbering fourteen on each front and thirty-two on each side, are in high relief. Those on the eastern façade represent contests between gods and giants ; on the western, between Greeks and Amazons ; on the southern, between Centaurs and Lapithæ ; and on the northern, scenes from the siege of Troy. Traces of bright colours have been found on the sculptures in pediment, metope, and frieze. This miracle of architecture, compact of glistening marble, marvellous sculpture, and glowing colour, has thrown its glamour over men through all the ages, and more than justifies the poetic description of Emerson :

" Earth proudly wears the Parthenon
As the best gem upon her zone."

In the sixth century the Parthenon was converted into a Christian church, dedicated to the " Divine Wisdom," and an apse was formed at its eastern end. In A.D. 1204, under the Frankish Dukes of Athens, it became a Latin church, in A.D. 1456 it was converted into a mosque, and in A.D. 1687, during the capture of Athens by the Venetians, it was much damaged by a shell which fell into a portion of the building used as a powder magazine. In A.D. 1688 Athens was restored to the Turks, and the building suffered considerable injury at their hands ; but in A.D. 1801, through the instrumentality of Lord Elgin, many of the sculptures were removed to the British Museum. In A.D. 1831 Greece became an independent kingdom, and still the Parthenon remains her greatest historic monument and her most precious heritage.

The **Temple of Apollo Epicurius, Bassæ,** near Phigaleia, in Arcadia (B.C. 430) (p. 91), of which Ictinus was the architect, was an exceptional design in which all three Greek Orders of Architecture—Doric, Ionic, and

Corinthian—were introduced. It is a peripteral hexastyle temple with fifteen columns on each flank, all built up in drums. The building is constructed of a hard, grey limestone, now covered with a beautiful pink lichen which gives it a mellow and picturesque appearance. The principal façade faces north, an unusual arrangement, apparently due to its erection on the site of an earlier temple. The statue of Apollo was placed at one side of the southern end of the naos, which formed the sanctuary of the earlier, oriented temple, and light was admitted by an opening in the eastern wall. Owing to the narrowness of the naos, instead of internal rows of columns there is a range of five Ionic half-columns on each side attached to short, cross walls projecting into the naos. These have an original treatment of capital, with angle volutes and high moulded bases (p. 93 C). The two columns farthest from the entrance on each side are joined to walls placed diagonally with those of the naos, while the single column at the southern end was of the Corinthian Order, of which it is generally believed to be the earliest example (p. 105 F). The lighting of the interior is conjectural, but the naos, north of the more ancient sanctuary, was probably hypæthral to admit light to the celebrated frieze above the half-columns (p. 91 F). This sculptured frieze, portions of which are in the British Museum, is about 2 ft. high and 100 ft. long, and represents battles of Centaurs and Lapithæ, and of Athenians and Amazons. The roof was covered with Parian marble slabs, measuring 3 ft. 6 ins. by 2 ft., and less than 2 ins. thick. The ceilings of peristyle, pronaos, and opisthodomos were richly treated with marble panels or lacunaria.

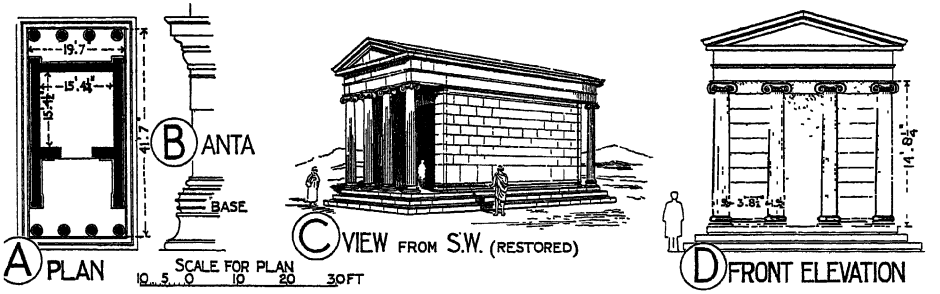
The Ionic Order

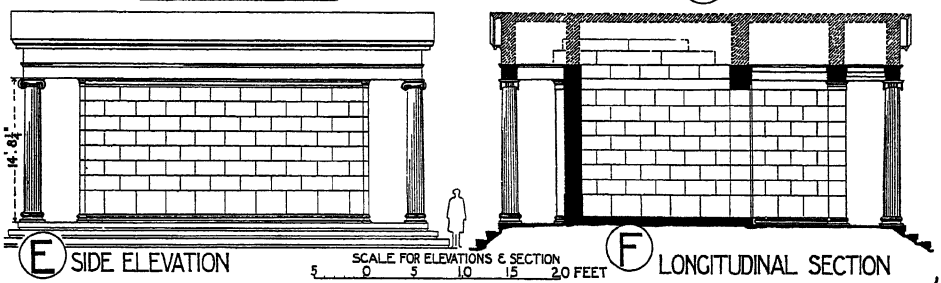
The Ionic Order (p. 93) is specially remarkable for its volute or scroll capital, which, like so many other decorative motifs, may have been derived from the Egyptian lotus (p. 94 B), which must have undergone sundry modifications on its way from Egypt through Assyria to Asia Minor (p. 94 E). The spiral is also found in Mycenæan jewellery and domestic articles as early as B.C. 800, and this might be sufficient to account for its adoption at a later period in Greece. The early Ionic capitals at Lesbos, Neandria (p. 94 M) and Cyprus (p. 94 A) exhibit volutes of a distinctly vegetable type with a palmette interposed, and there are Ionic capitals at Delos (p. 94 J), Naukratis (p. 94 K), Delphi (p. 94 L), and Athens which would seem to form a link between these and later types.

The nautilus shell (p. 94 D) with its simple spiral and the ram's horns with their voluptuous curls (p. 94 G) are examples of nature's spirals which were at hand for the observant architect; and scrolls, which were no doubt derived from nature, are seen on Egyptian wall paintings (p. 94 F), Cypriote vases (p. 94 H), and bronze armour plates (p. 94 N). The bracket capital (p. 94 C) shows a simple device for decreasing the bearing of the architrave which may have been suggested by timber forms, as at Ephesus (p. 103 C), where the volutes have a great projection.

Ionic columns, including capital and base, are usually about nine times their lower diameter in height and have twenty-four flutes separated by fillets and not by arrises or sharp edges as in the Doric column. The earlier examples, however, have shallow flutes separated by arrises, and the flutes number as many as forty in the Archaic Temple at Ephesus (p. 93 A) and at Naukratis, and forty-four at Naxos. The moulded base (p. 120 H) usually consists of an upper and lower torus, divided by a scotia

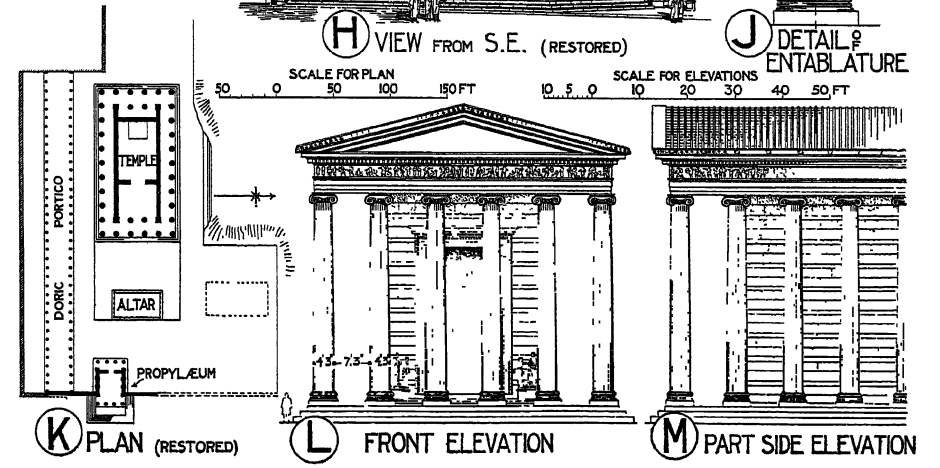
TEMPLE ON THE ILISSUS: ATHENS



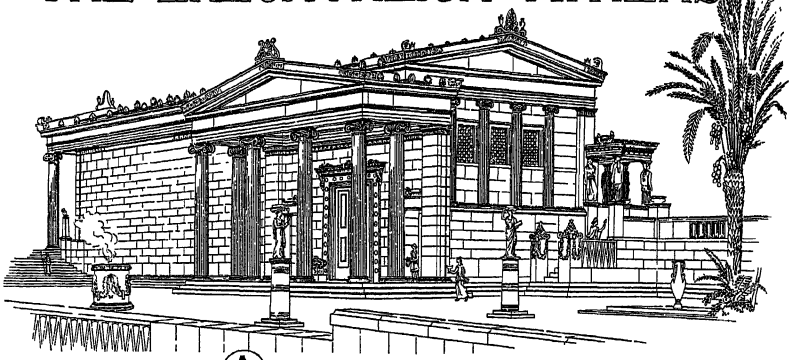


TEMPLE OF ATHENA POLIAS: PRIENE

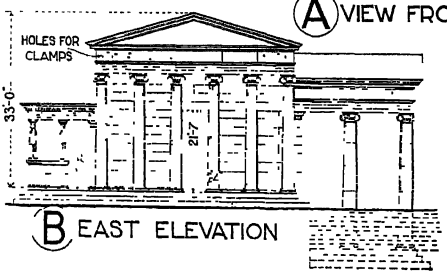




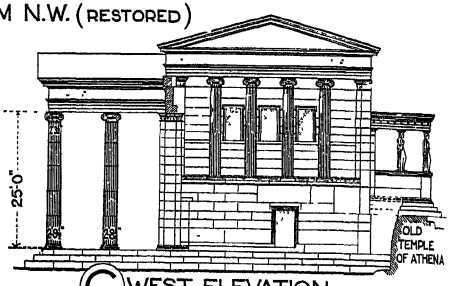
THE ERECHTHEION : ATHENS



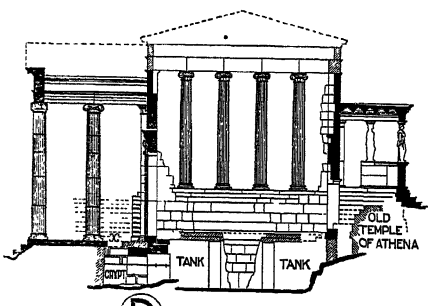
A VIEW FROM N.W. (RESTORED)



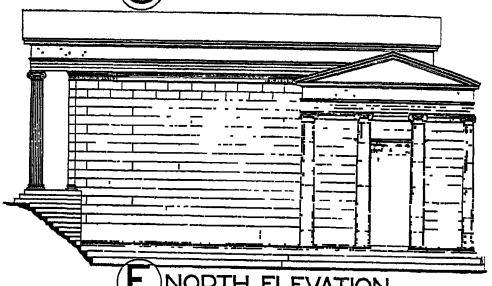
B EAST ELEVATION



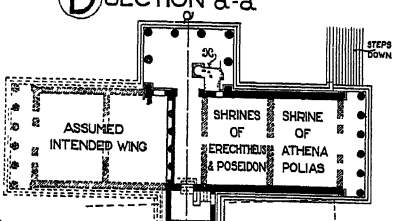
C WEST ELEVATION



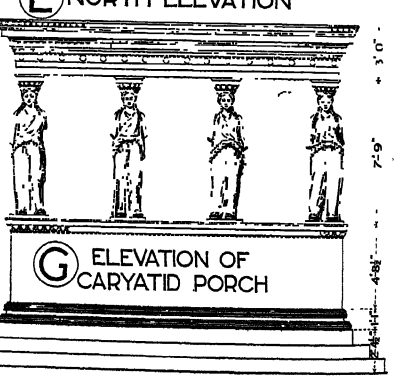
D SECTION a-a



E NORTH ELEVATION



F PLAN



G ELEVATION OF CARYATID PORCH

SCALE FOR ELEVATIONS & SECTIONS

SCALE FOR PLAN

and fillets, but there is no square plinth. The Asiatic treatment consisted of an upper torus and scotia only, and in the later examples a lower torus was added, making what is known as the Attic base. The capital consists of a pair of volutes or spirals, about two-thirds the diameter in height, on the front and back of the column, connected at the sides by the cushion, sometimes plain and sometimes ornamented, and on the front and back by an echinus moulding carved with the egg and dart, and a bead moulding. The outline of the volutes was shaped either by hand or by geometrical devices (p. 94 Q, R, S), or even by twisting a string round an inverted cone or common whelk shell (p. 94 P). The treatment of the capitals of the angle columns, in which it was necessary to show volutes on two adjacent faces, was very skilfully effected (p. 93 B, D, E, F), while an unusual development was to make the angle capital with volutes facing all four sides, by joining the two adjacent volutes at an angle, as in the Temple at Bassæ (pp. 91 B, C, F, 93 C).

The **Ionic entablature** varies in height, but is usually about one-fifth of the whole Order (p. 93). It consists of (*a*) architrave, usually formed as a triple fascia, in three planes like superimposed beams ; (*b*) frieze, sometimes plain, but often ornamented by a band of continuous sculpture (pp. 93 C, 97 H, L, M, 104 A) ; (*c*) cornice, with no mutules, but usually with dentil ornament, reminiscent of squared timbers, surmounted by the corona and cyma recta moulding.

The Doric Order provided a setting for sculpture in its frieze where the sculptured metopes were framed in by the triglyphs, whereas the Ionic incorporated it with the Order itself in the form of continuous carved friezes.

The principal examples of the Ionic Order, found on the mainland in Greece and in Asia Minor, are set forth below.

IONIC TEMPLES

Archaic Temple of Artemis, Ephesus (p. 101)	B.C. 550
Temple on the Ilissus, Athens (p. 99)	B.C. 484
Temple of Nikè Apteros, Athens (p. 99)	B.C. 438
Temple of Apollo Epicurius, Bassæ (internal Order only) (p. 95)	B.C. 430
The Erechtheion, Athens (p. 100)	B.C. 420–393
Temple of Artemis, Ephesus (p. 101)	B.C. 356
Temple of Dionysos, Teos	B.C. 350
Temple of Hera, Samos	B.C. 350
The Philippeion, Olympia (external colonnade) (pp. xxxvi B, 76 F)	B.C. 338
Temple of Apollo Didymæus, near Miletus (p. 102)	B.C. 335–320
Temple of Athena Polias, Priene (p. 107)	B.C. 320

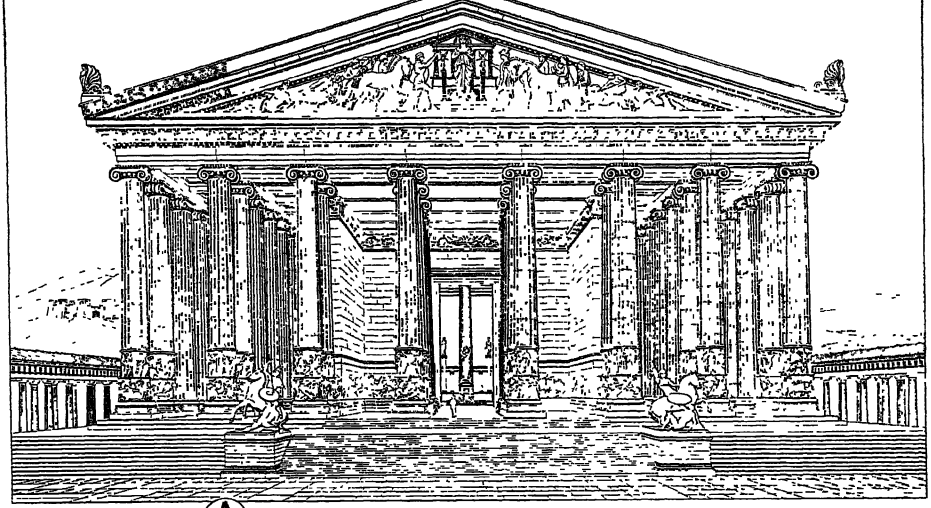
The **Temple on the Ilissus, Athens** (B.C. 484) (pp. 93 B, 97), which was amphi-prostyle tetrastyle and stood on a stylobate of three steps, was entirely destroyed by the Turks in A.D. 1780. The naos was only 15 ft. 4 ins. square, and the columns, 14 ft. 8 ins. high including base and capital, supported an entablature 4 ft. high. The restored view (p. 97 C) will give a good idea of the appearance of these smaller temples.

The **Temple of Nikè Apteros, Athens** (B.C. 438) (pp. 104 A, 110 B, H), of which Callicrates was the architect, is a most exquisite small Ionic temple dedicated to " Wingless Victory." This temple of Athena Nikè is picturesquely perched on the south-western spur of the Acropolis, and the platform of rock on which it stands was surrounded on three sides by a marble balustrade 3 ft. 2 ins. high, enriched with very fine sculpture dating from B.C. 425–400. The sacrificial altar of the goddess stood to the east in front of the temple entrance. This little temple, which is only 23 ft. high to

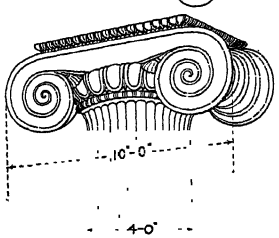
a museum, a treasury, and even a bank. The building, according to Dr. Murray's restoration based on Pliny's account, rested on a lower stylobate of four steps with an additional flight at each end, placed between the first and second rows of columns, in order to reach the upper platform. The plan (p. 103 B), as conjecturally restored by Mr. A. E. Henderson, also with the aid of Pliny (A.D. 23–79), differs from that by Dr. Murray, and is dipteral octastyle, with double ranges of twenty columns on each flank. In addition to the naos he shows a pronaos, epinaos, treasury, and stairs in the thickness of the wall to the roof. Pliny mentions that the temple had 100 columns, thirty-six of which were sculptured on the lower drum, and it is assumed by Mr. Henderson that the sixteen columns at either end and the four columns in antis were treated with square pedestals (p. 103 E), and that the rest of the columns had moulded bases (p. 93 E). The naos, which contained the statue of Artemis, is believed to have had superimposed columns to carry the roof. The building must have been one of the most impressive among Greek temples, and was noted for the sculptures, probably suggested by the archaic temple, on the square pedestals and circular drums. The restoration from a drawing by Mr. A. E. Henderson (p. 103 A) will give some idea of its magnitude and magnificence, situated within a temenos and placed upon a high stylobate with the impressive porticoes reached by central flights of steps. The front sixteen columns, 54 ft. in height, described by Pliny as 60 Greek ft., are shown with sculptured pedestals and drums, while behind are the peristyle columns of the same height but without pedestals or drums (p. 93 E). The entablature is restored without a frieze, as was usual in Asia Minor; the pediment is flanked by acroteria and encloses a sculptured tympanum representing Artemis mothering her devotees, who are bringing offerings, while the crowning acroterion represents the goddess enthroned. None of the superstructure is left standing of this great Temple of Artemis, which played its part in one of the last living dramas of the pagan world in its stand against Christianity preached by S. Paul at Ephesus (Acts xix). It is for ever associated in the popular mind with that cry of a lost cause: "Great is Diana of the Ephesians!" In spite of partial ruin by the Goths (A.D. 262) the temple and its cult seem to have lasted till the Edict of Theodosius closed all pagan temples (A.D. 392). It was then its grim fate to supply materials for the new cathedral of S. John, while all that remained on the ancient site was buried deep in silt till it was unearthed by the architect Wood in A.D. 1869. Descriptions by Pliny, broken fragments in the British Museum, excavations by Wood and Hogarth, restorations by Murray and Henderson, scholarly criticisms by Lethaby, and the vivid sketch in the Acts of the Apostles, all help us to visualise, not this temple-marvel merely, but also the civic life with whose varied aspects it was associated. Some of its architectural features were transferred to other buildings, notably the eight dark-green marble columns which now separate nave from aisles in S. Sophia, Constantinople (p. 229). There are also fragments from the Orders of both temples in the British Museum.

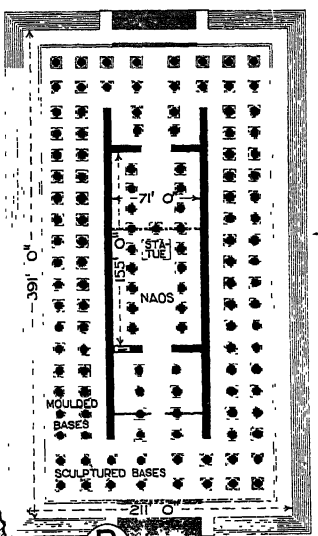
The **Temple of Apollo Didymæus, Miletus** (B.C. 335–320) (pp. 76 N, 106), was the design of Pæonius of Ephesus and Daphne of Miletus. The original archaic temple had an avenue of seated figures, with a lion and sphinx at the entrance, as dedicatory offerings to Apollo, and ten of these figures, with the lion and sphinx, are in the British Museum. This archaic temple was destroyed by the Persians under Darius on the suppression of the Ionic revolt, B.C. 496. The second temple (pp. 76 N, 106) on the site is

THE TEMPLE OF ARTEMIS: EPHESUS

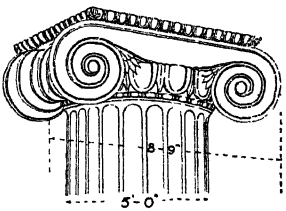


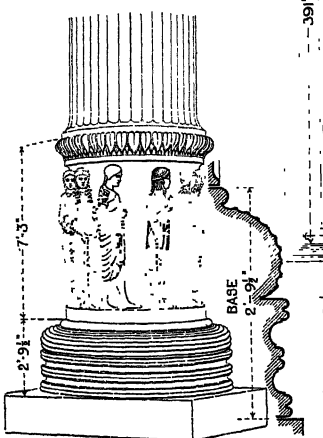
A RESTORED VIEW OF TEMPLE & TEMENOS: B.C. 356





B PLAN

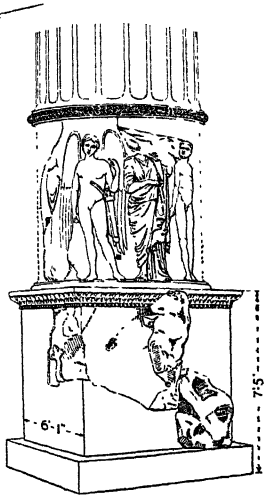




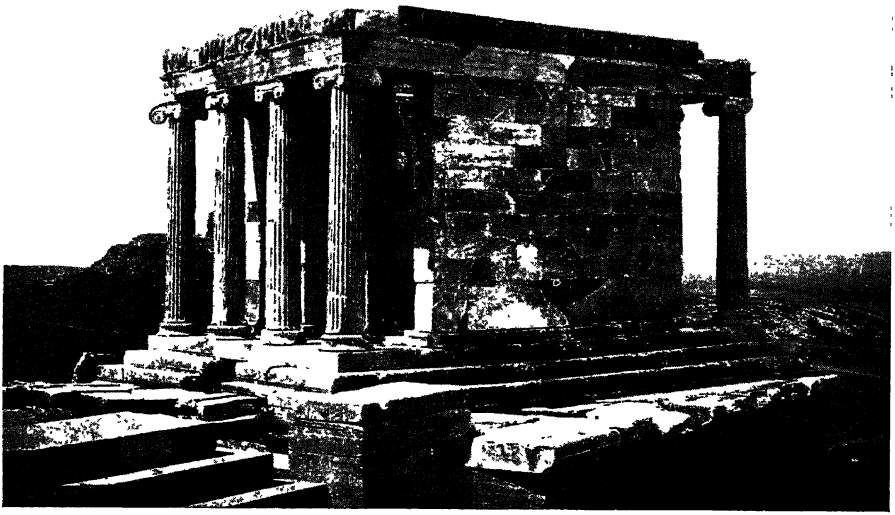
C COLUMN OF ARCHAIC TEMPLE : B.C. 550



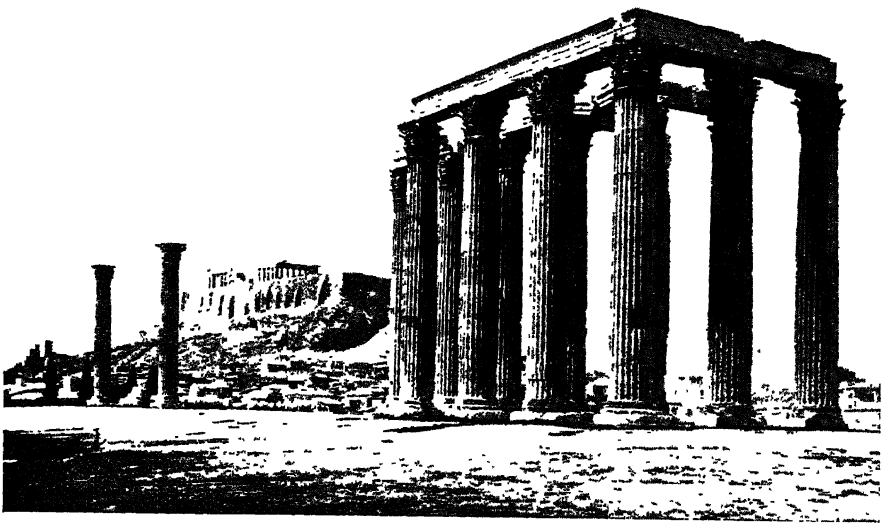
D CARVING TO CYMATIUM.



E COLUMN OF LATER TEMPLE · B.C. 356.

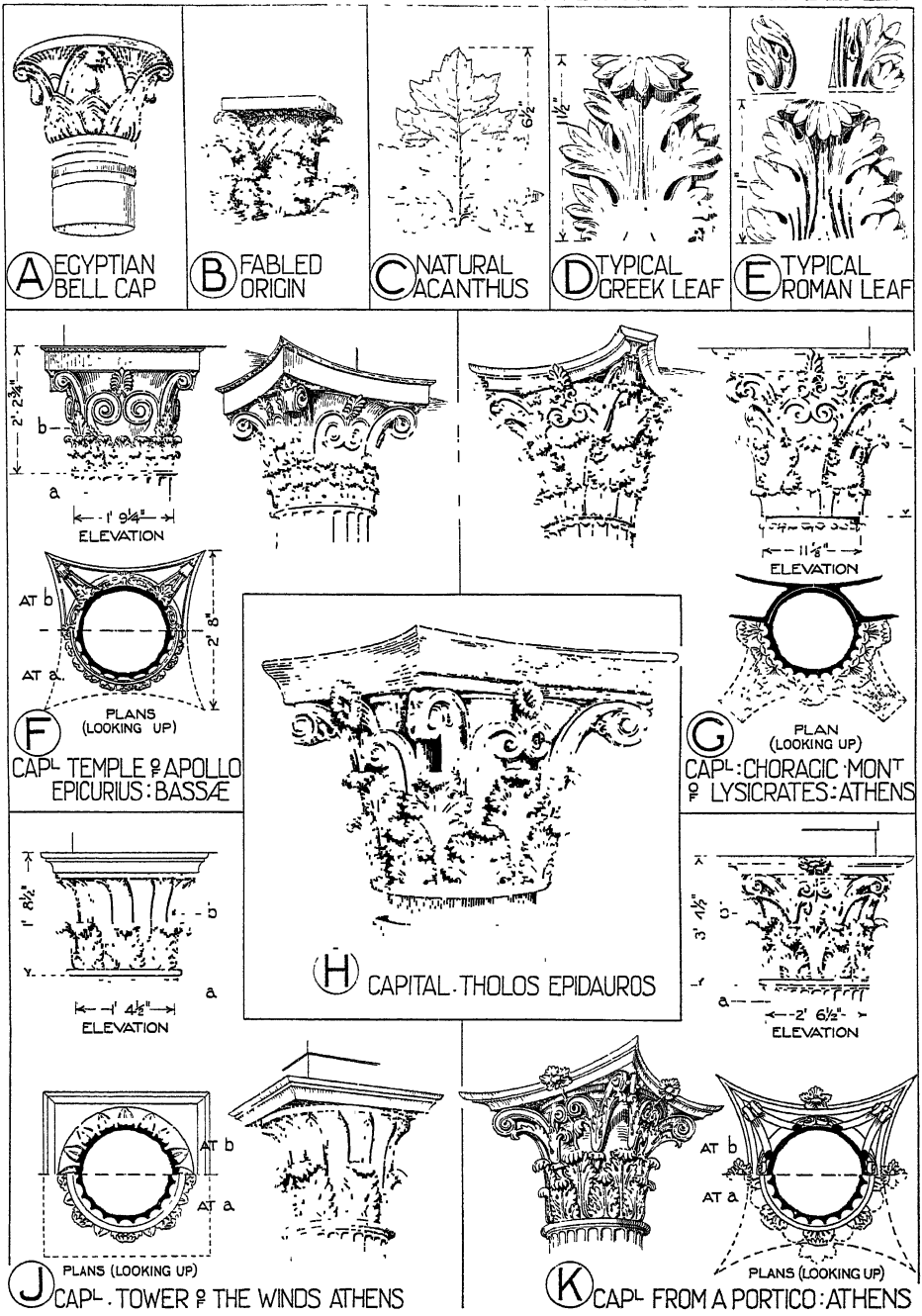


A. Temple of Nikè Apteros (Athena Nikè), Athens

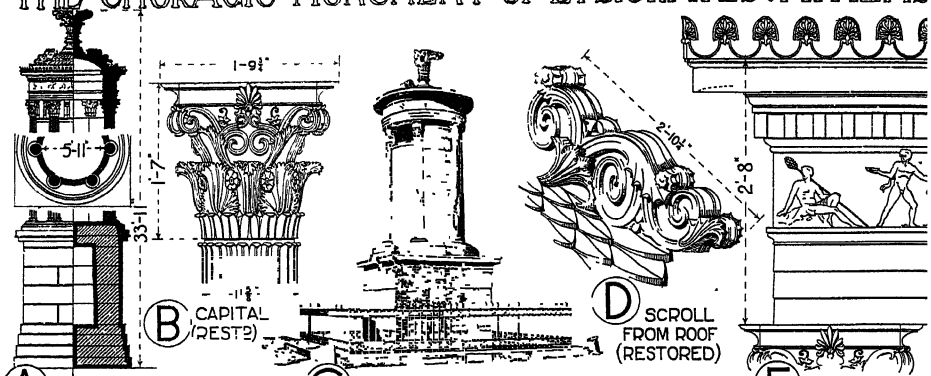


B. The Olympieion, Athens

EVOLUTION OF THE CORINTHIAN CAPITAL

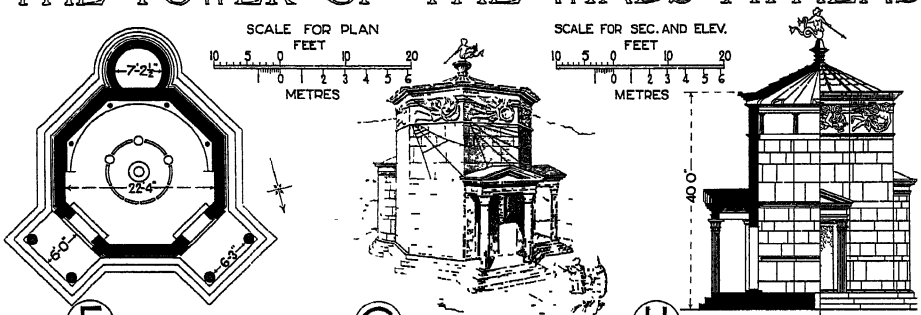


THE CHORAGIC MONUMENT OF LYSICRATES: ATHENS



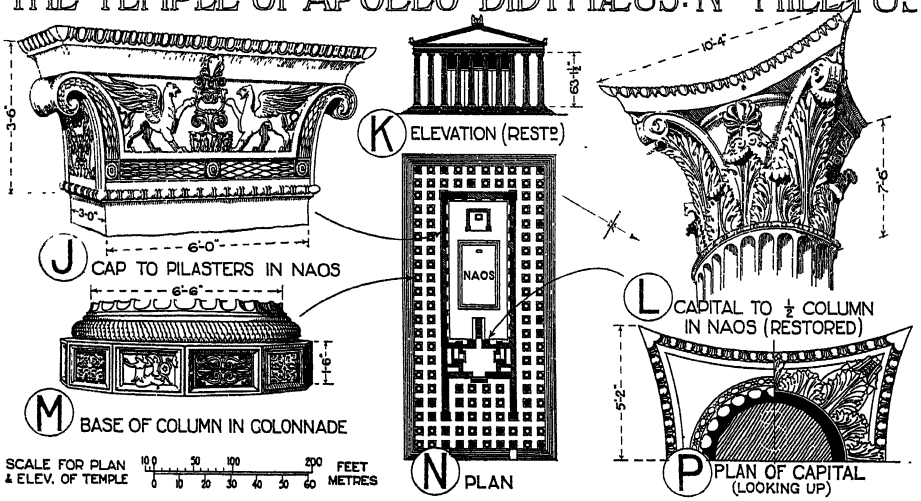
A ½ ELEV. & SEC. B CAPITAL (REST?) C VIEW FROM S.E. D SCROLL FROM ROOF (RESTORED) E ENTABLATURE

THE TOWER OF THE WINDS: ATHENS



F PLAN G VIEW FROM E. (REST?) H HALF SECTION & ELEVATION

THE TEMPLE OF APOLLO DIDYMÆUS: NR. MILETUS



J CAP TO PILASTERS IN NAOS K ELEVATION (REST?) L CAPITAL TO ½ COLUMN IN NAOS (RESTORED) M BASE OF COLUMN IN COLONNADE N PLAN P PLAN OF CAPITAL (LOOKING UP)

referred to by Strabo, who says, " In after times the inhabitants of Miletus built a temple which is the largest of all, but which on account of its vastness remains without a roof, and there now exist inside and outside precious groves of laurel bushes." This building was dipteral decastyle on plan, and the naos was hypæthral. It had a very deep pronaos, with an ante-chamber beyond and stone stairs on either side. At the western end of the naos Messrs. Rayet and Thomas discovered the foundations of a shrine. The naos walls were ornamented with Ionic pilasters, 6 ft. wide and 3 ft. deep, resting on a continuous podium, ranging with the peristyle level. These pilasters were crowned with capitals of varied design, and between them there was a sculptured band of griffins and lyres (p. 106 J). On either side of the doorway at the eastern end were half-columns with Corinthian capitals, in which the acanthus leaves were unusually placed and the central volutes undeveloped (p. 106 L). The peristyle columns of the Ionic Order are fluted, and the bases are of varied design, being octagonal with carved panels on each face (p. 106 M).

The **Temple of Athena Polias, Priene** (B.C. 320) (pp. 93 F, 97), near Miletus, was picturesquely situated in a walled enclosure, like a fortified town, and containing a theatre and stadion. The temple shown on the restored plan (p. 97 K) is a peripteral hexastyle example, with 11 columns on the flank. The Ionic columns are 4 ft. 3 ins. in diameter, and had a height of 40 ft., supporting an entablature 9 ft. 8 ins. in depth. Some of the Ionic capitals, anta capitals, and cornice mouldings, showing great delicacy of workmanship, are in the British Museum.

The Corinthian Order

The Corinthian Order (p. 116) was less used by the Greeks than either the Doric or Ionic Order.

The **Corinthian column,** with base and shaft resembling the Ionic, is generally about ten times its diameter in height, and like the other Orders was placed on a stylobate. The distinctive feature is the capital, which is much deeper than the Ionic, being about 1⅛ diameters high (p. 105). Its origin is uncertain, but it may have been a development from that type of Ionic which has anthemion sculpture beneath the volutes, as in the Erechtheion, or it may have been a combination of the bell-shaped Egyptian capital (pp. 41 L–Q, 105 A) and the Assyrian spiral (p. 47 H). Callimachus, a worker in Corinthian bronze, is sometimes credited with being the original designer of this capital, and, according to Vitruvius (Bk. IV, chap. i), he obtained the idea from observing a basket over the grave of a Corinthian maiden, covered by a tile for protection and surrounded by acanthus leaves, which formed volutes at the angles (p. 105 B). The earlier examples appear to have been in bronze, and Pliny (XXXIV, chap. iii) refers to a portico which was called Corinthian because of its bronze capitals. The usual type has a deep, inverted bell, the lower part of which is surrounded by two tiers of eight acanthus leaves (p. 105 C, D), and from between the leaves of the upper row rise eight caulicoli (*caulis* = a stalk), each surmounted by a calyx from which emerge volutes or helices supporting the angles of the abacus and the central foliated ornaments. Each face of the moulded abacus is curved outwards to a point at the angles, as in the Temple of Apollo Didymæus, Miletus (p. 106 L, P), the Olympieion, Athens (p. 124 A), the Temple of Apollo Epicurius (p. 105 F), the Tholos, Epidauros (p. 105 H),

and the Portico, Athens (p. 105 K), or the abacus is chamfered at each angle, as in the Monument of Lysicrates, Athens (p. 105 G). Another type has one row of acanthus leaves with palm leaves above and no volutes, and a moulded abacus, square on plan, as in the Tower of the Winds, Athens (p. 105 J).

The **Corinthian entablature**, which is usually about one-fifth of the height of the entire Order, bears a general resemblance to the Ionic, with the usual triple division of architrave, frieze, and cornice, but with additional carved mouldings.

CORINTHIAN EXAMPLES

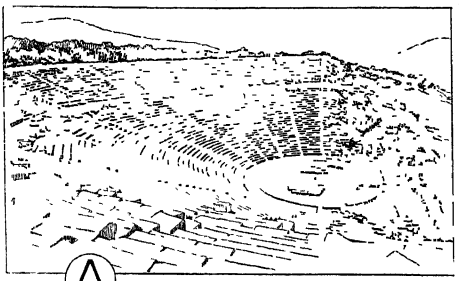
Temple of Apollo Epicurius, Bassæ (p. 95)	B.C. 430
The Tholos, Epidauros (Internal Order) (pp. 76 E, 105 H)	B.C. 350
The Philippeion, Olympia (Internal Order) (p. 76 F)	B.C. 338
Choragic Monument of Lysicrates, Athens (p. 108)	B.C. 335
Temple of Apollo Didymæus, Miletus (p. 102)	B.C. 334–320
The Olympieion, Athens (p. 111)	B.C. 174—A.D. 117
Tower of the Winds, Athens (p. 111)	B.C. 100–35
The Vestibule, Eleusis.	

The **Choragic Monument of Lysicrates, Athens** (B.C. 335) (pp. 105 G, 106, 116 E, 125 E) is a type of monument erected to support a tripod, as a prize for athletic exercises, or musical competitions in Greek festivals. There were many of these in the Street of Tripods. They are referred to in Virgil's Æneid (V, 140) :

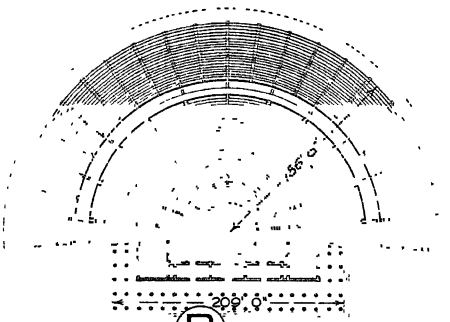
> " In view amid the spacious circle lay
> The splendid gifts, the prizes of the day,
> Arms on the ground, and sacred tripods glow
> With wreaths of palms, to bind the Victor's brow."
> (Translation by Pitt.)

The rusticated podium or base of Piræus stone, 9 ft. 6 ins. square, supports a circular structure of 6 ft. internal diameter, surrounded by Corinthian columns supporting an entablature crowned by a marble dome, ornamented with sculptured scrolls terminating in a floral ornament which formerly supported the bronze tripod, 34 ft. above the ground. Between the columns, which are complete in themselves (pp. 105 G, 116 E) are curved wall panels with the upper part ornamented with bas-reliefs. The interior was apparently never intended for use, as there was no provision for admitting light. The six Corinthian columns, 11 ft. 7 ins. high, project rather more than half their diameter beyond the panels, and rest on a secondary base encircling the monument. The flutings of the columns are peculiar, as they terminate in leaves and the channel above them may have had a bronze collar, though the Greeks used similar sinkings under Doric capitals. The capitals, 1 ft. 7 ins. high, somewhat resemble those of the half-columns of the naos in the Temple of Apollo Didymæus, Miletus. The foliage is different from the later type in having a lower row of sixteen small lotus leaves, then a single row of beautiful acanthus leaves, and between them an eight-petalled flower resembling an Egyptian lotus. Inside, where they could not be seen, the capitals were left unfinished. The architrave bears an inscription indicating the purpose of the monument, the frieze is sculptured to represent the myth of Dionysos and the Tyrrhenian pirates, and the cornice is crowned with a peculiar honeysuckle scroll instead of a cyma recta moulding, probably an imitation of the antefixæ in Greek temples. The cupola is delicately carved with a covering of laurel leaves, and from the upper part branch out three scrolls, generally supposed to have supported dolphins or figures

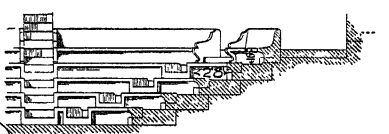
THE THEATRE, EPIDAUROS



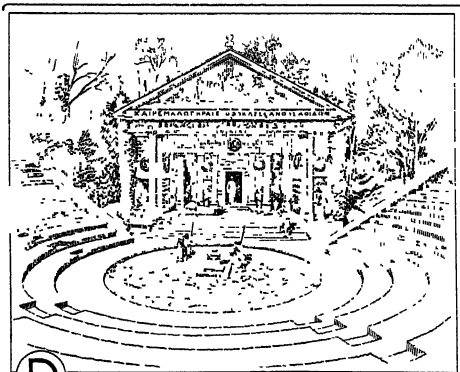
A THE THEATRE (AS EXISTING)



B PLAN

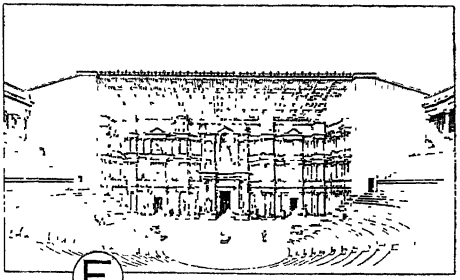


C DETAIL OF SEATING

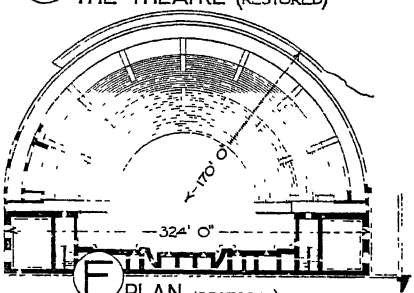


D THE THEATRE: BRADFIELD COLLEGE

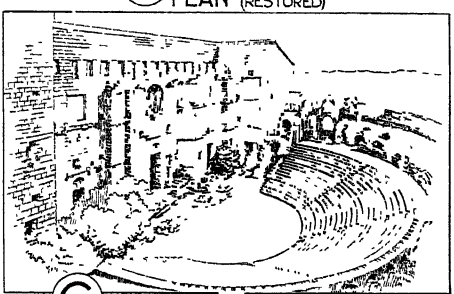
THE THEATRE, ORANGE



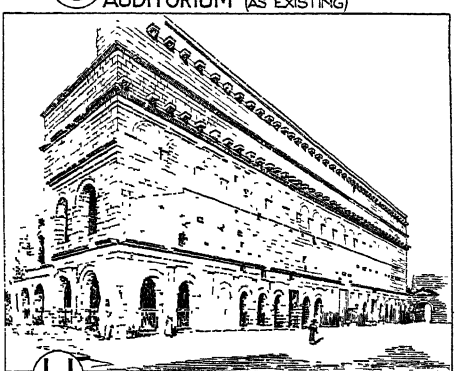
E THE THEATRE (RESTORED)



F PLAN (RESTORED)

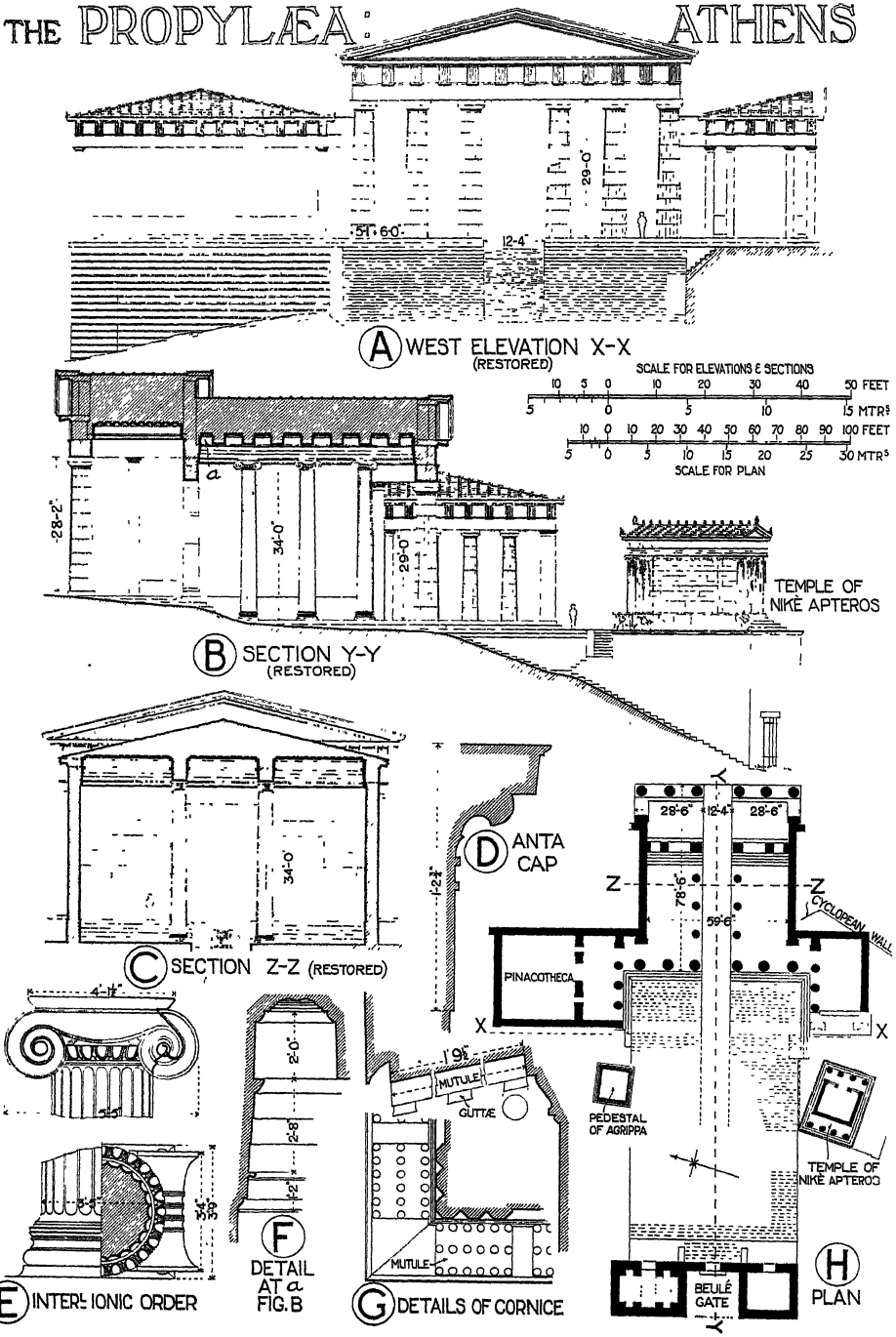


G AUDITORIUM (AS EXISTING)



H EXTERIOR SHOWING STAGE WALL

THE PROPYLÆA : ATHENS



(p. 125 E). The central foliated stalk, branching in three directions, still has the cavities for the reception of the original tripod.

The **Olympieion, Athens** (B.C. 174) (pp. 76 H, 104 B, 124 A) stands on the site of an earlier Doric temple commenced by Pisistratus B.C. 530. It was begun by Antiochus Epiphanes of Syria, from designs by Cossutius, a Roman architect, and so is often regarded as a Roman building. It remained incomplete, and Pliny records that in B.C. 80 Sulla transported some of the columns to Rome for the Temple of Jupiter Capitolinus (p. 138). The building was completed in A.D. 117 by Hadrian, but only fifteen columns of the original peristyle are standing. It was dipteral octastyle on plan (p. 76 H), and occupied an area of 362 ft. 6 ins. by 145 ft. 6 ins., somewhat larger than that of the Hypostyle Hall at Karnak, and was placed in the centre of a magnificent peribolus or enclosure measuring 680 ft. by 424 ft., part of the retaining wall of which still remains. It is described by Vitruvius as hypæthral, but this is inconclusive, as in his time it was unfinished. The one hundred and four peristyle columns were 6 ft. 4 ins. in diameter and 56 ft. high, a proportion of about one to nine, and the fine Corinthian capitals appear to date from both periods of its construction (p. 124 A).

The **Tower of the Winds, Athens** (B.C. 100–35) (pp. 105 J, 106, 124 B, C), is also known as the Horologium of Andronikos Cyrrhestes, who erected it for measuring time by means of a clepsydra or water-clock internally, and by a sundial externally; while it was also provided with a weather vane. The building, on a stylobate of three steps, is octagonal, and its eight sides face the more important points of the compass. It measures 22 ft. 4 ins. internally, and on the north-east and north-west sides are porticoes with fluted Corinthian columns 13 ft. 6 ins. high, which have no base, and the capitals are of a plain, unusual type, without volutes, the upper row of leaves resembling those of the palm. From the south side projects a circular chamber, probably used as a reservoir to supply the water-clock. The interior is 40 ft. 9 ins. high, and the upper part is encircled by small fluted Doric columns, standing on a circular band of stone. The external wall of the octagonal structure is plain for a height of 29 ft. with the exception of the incised lines forming the sundial, and above this, boldly sculptured figures on each face represent the eight principal winds (p. 124 B, C). The roof, formed of twenty-four blocks of marble, was once surmounted by a bronze Triton (Vitruvius, Bk. I, chap. vi).

THEATRES

The Greek theatre, which consisted of orchestra, auditorium, and stage, was generally hollowed out of the slope of a hill near a city, was unroofed, and was intended for use in the daytime (p. 109). The orchestra, the germ of the Greek theatre, was a complete circle, and here the chorus chanted and danced, as by voice and gesture they unfolded the tale of the drama acted on the stage. The auditorium rose in tiers of seats cut out of the solid rock, sometimes faced with marble, encircling about two-thirds of the orchestra, and thus spectators at the two extremities faced towards the orchestra, but away from the stage. The stage or "logeion" (speaking-place), for the few actors usual in a Greek drama, was a long, narrow platform with permanent architectural background connected with the booth or dressing-room behind, known as the "skene," a name retained in the "scene" of modern theatres. To what height above the level of the orchestra this platform or stage was raised is a question that has been much

debated. The most probable theory as to the evolution of the stage and its relation to the orchestra seems to be the following: (1) In pre-Æschylean drama, before regular theatres were built, an actor mounted on a table, possibly the table-altar of the god Dionysos, and held a dialogue with the dancers and chorus. The rude table-stage illustrated on vases from South Italy may represent a local retention of this primitive custom. (2) In the fifth century B.C., though no direct evidence is available, it is practically certain that there was a low wooden stage connected by steps with the orchestra. (3) The fourth century B.C. is the earliest period in which there is architectural evidence that at Megalopolis there was a wooden platform from 3 ft. 3 ins. to 4 ft. 6 ins. high, with a stone colonnade as a background, and that at Epidauros the wooden platform was supported by a wall 12 ft. high. (4) In later Hellenistic and Roman times, the Greek stage, according to Vitruvius, was from 10 to 12 ft. high, and his statement is borne out by extant examples.

The **Theatre of Dionysos, Athens** (B.C. 340) (p. 75 C), in which it is said thirty thousand spectators could be accommodated, is the prototype of all Greek theatres. It is scooped out of the slope of the Acropolis rock and was thus at the centre of the life of the city, and here the plays of the great Athenian dramatists were presented, and here those famous choragic competitions took place during the Panathenaic festivals, for which the tripods were awarded, such as that which was borne aloft on the Monument of Lysicrates.

The **Theatre, Epidauros** (p. 109 A, B, C), designed by Polycleitos, is the most beautiful as well as the best preserved of Greek theatres. The circle of the orchestra, which is intact, is about 66 ft. across, and the entire theatre is 373 ft. in diameter. Thirty-two rows of seats forming the lower division are separated by a broad passage or diazoma from the twenty rows above, while twenty-four flights of steps diverge as radii from bottom to top, and give access to all parts of the theatre.

There was usually such a theatre in every Greek settlement, as at Egesta, Syracuse, Argos, and Ephesus, but they have been altered by the Romans.

The **Theatre, Bradfield College** (p. 109 D), excavated out of a chalk pit, gives an excellent idea of a Greek theatre on a small scale, with its concrete-lined steps and seats and its wooden stage and scene, and reality is given to the use of the various parts by the Greek plays periodically given there.

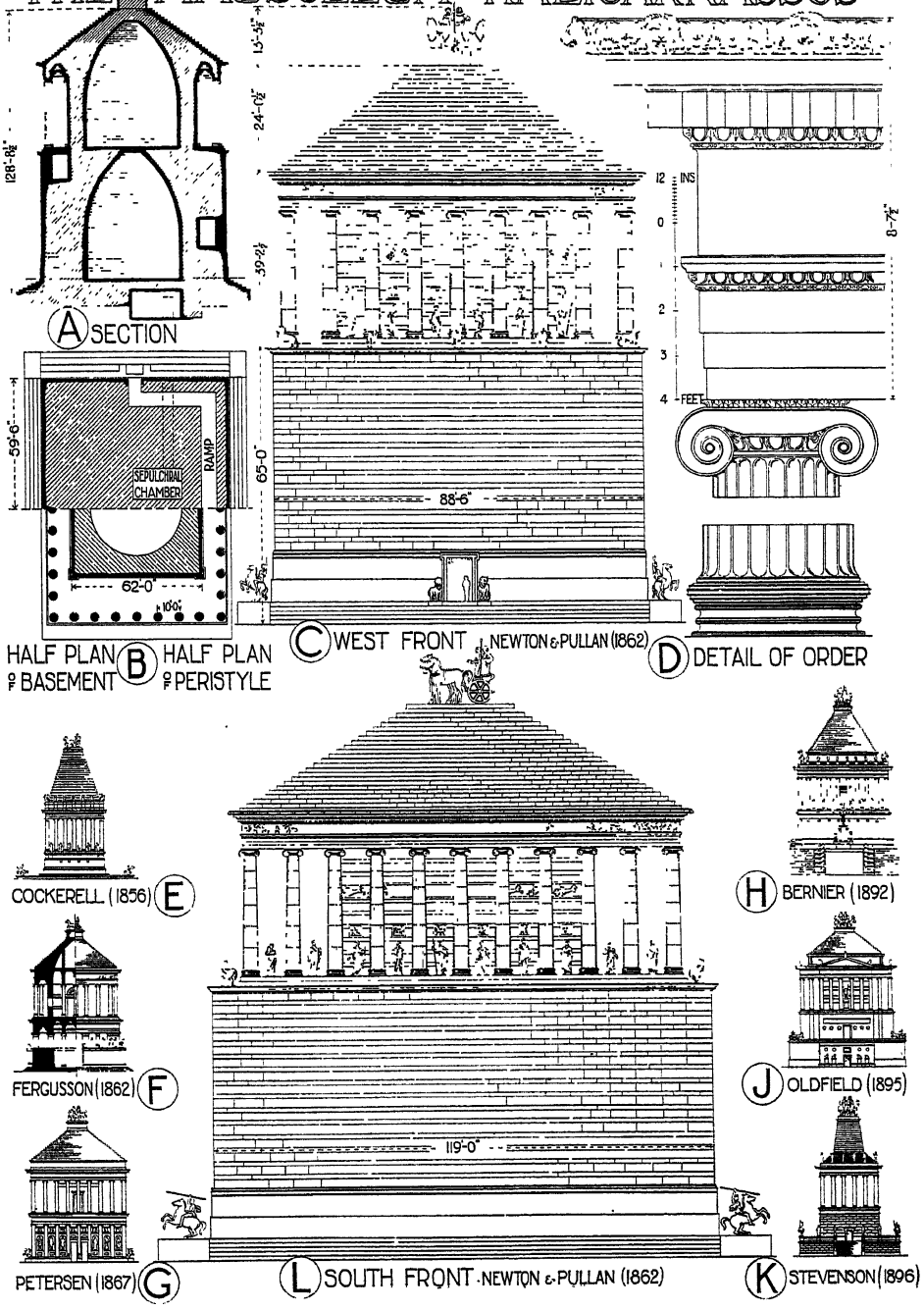
DOMESTIC BUILDINGS

Greek houses resembled the palaces in general arrangement, as is seen in remains dating from the Hellenic period at Athens, Delos, and Priene. They appear to have had one storey only, grouped round an internal court or peristyle. Vitruvius (Bk. VI, chap. x), referring to the general arrangement, says there was no atrium, but a peristylium with porticoes on three sides, and chambers grouped around. It is generally held that the Græco-Roman houses at Pompeii may be taken as typical of those erected in the Hellenic period by the Greeks themselves, though there are indications at Pompeii that there was often more than one storey. These houses certainly give an insight into the habits and domestic life of the period (p. 179).

PROPYLÆA

Propylæa, or entrance gateways, were erected in many of the principal cities of Greece, such as Athens, Epidauros, Sunium, Eleusis, and Priene.

THE MAUSOLEUM: HALICARNASSOS



A SECTION

HALF PLAN OF BASEMENT B HALF PLAN OF PERISTYLE

C WEST FRONT · NEWTON & PULLAN (1862)

D DETAIL OF ORDER

COCKERELL (1856) E

FERGUSSON (1862) F

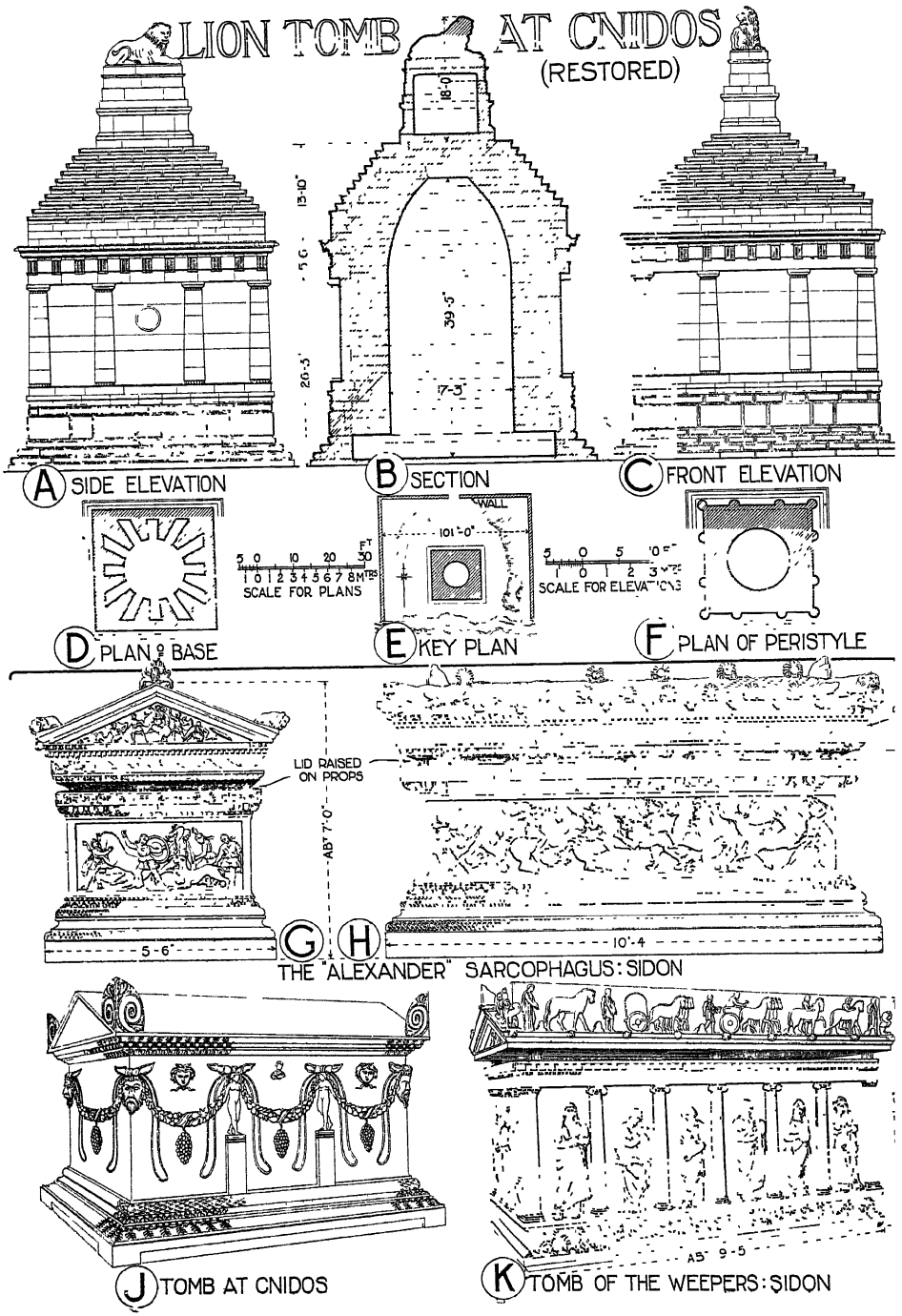
PETERSEN (1867) G

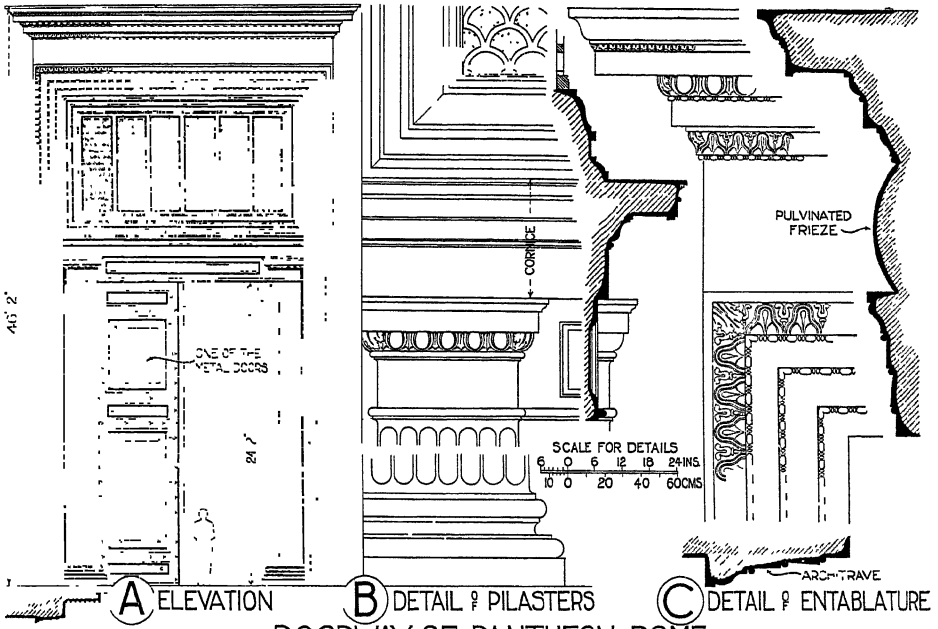
L SOUTH FRONT · NEWTON & PULLAN (1862)

H BERNIER (1892)

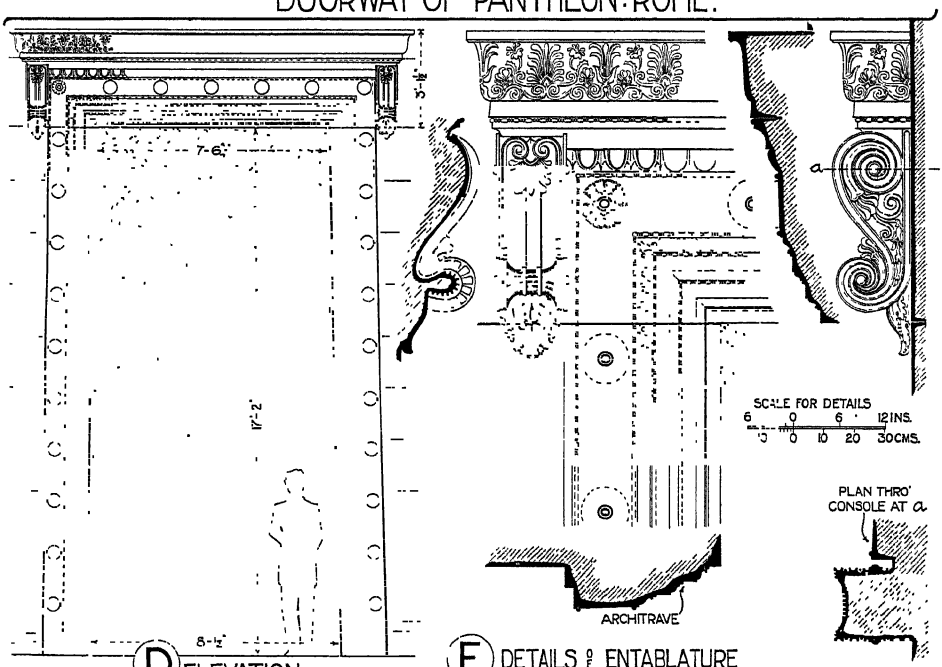
J OLDFIELD (1895)

K STEVENSON (1896)


LION TOMB AT CNIDOS
(RESTORED)
18'-0"
15'-10"
5'-6"
26'-3"
39'-5"
17'-3"
A SIDE ELEVATION
B SECTION
C FRONT ELEVATION
WALL
101'-0"
SCALE FOR PLANS
SCALE FOR ELEVATIONS
D PLAN OF BASE
E KEY PLAN
F PLAN OF PERISTYLE
LID RAISED ON PROPS
AB 7'-0"
5'-6"
10'-4"
G H
THE "ALEXANDER" SARCOPHAGUS: SIDON
AB 9'-5"
J TOMB AT CNIDOS
K TOMB OF THE WEEPERS: SIDON

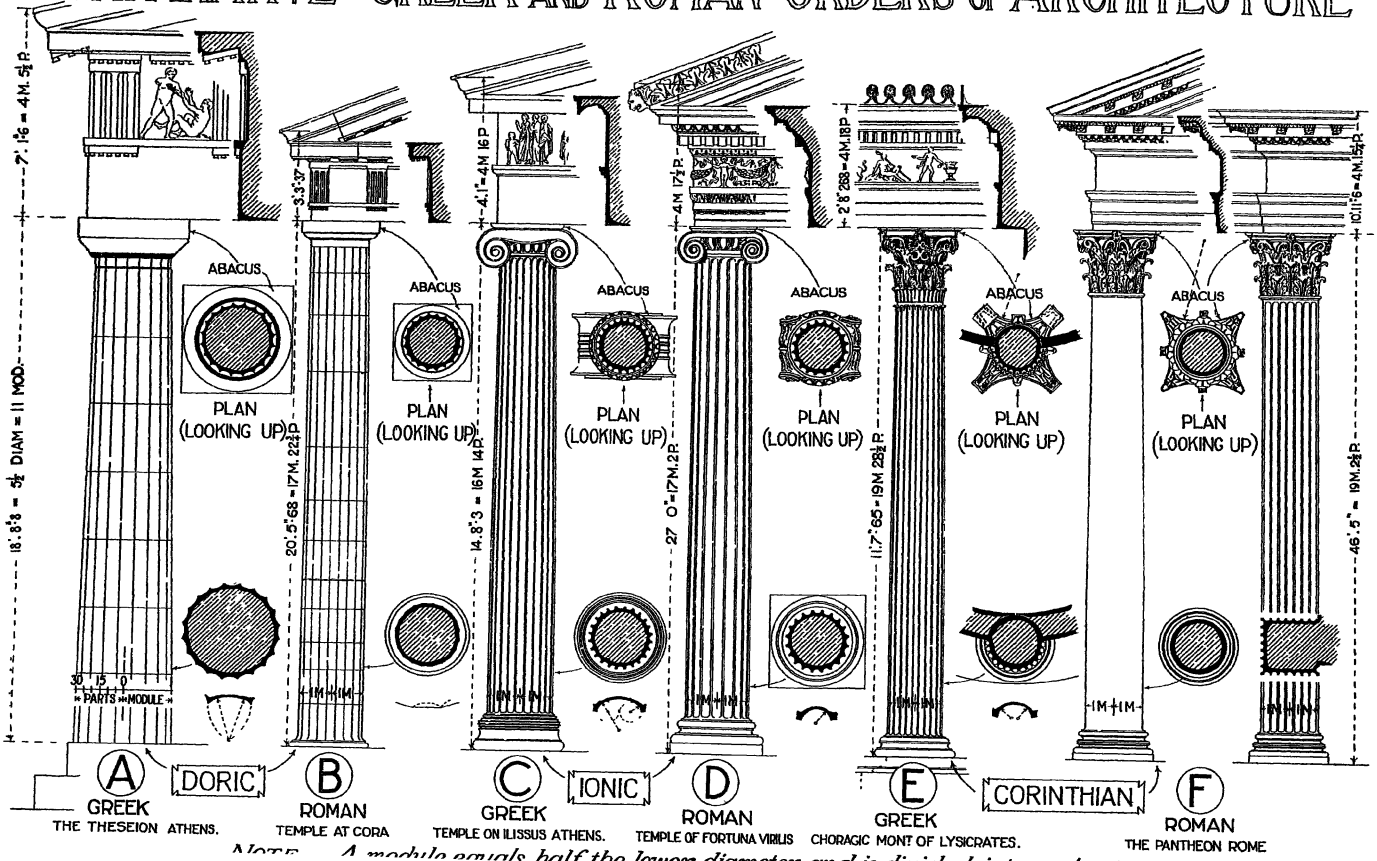


DOORWAY OF PANTHEON: ROME.



DOORWAY OF N. PORTICO: ERECHTHEION: ATHENS

COMPARATIVE GREEK AND ROMAN ORDERS OF ARCHITECTURE



NOTE — A module equals half the lower diameter and is divided into 30 parts

The **Propylæa, Athens** (B.C. 437–432) (pp. iv, 75, 110), erected under Pericles by the architect Mnesicles, form the imposing entrance gateway to the Acropolis approached by a steep ascent from the plain below. The front and rear hexastyle Doric porticoes are on different levels, and give access to a covered hall with wide central passage flanked by Ionic columns and with an eastern wall with five doorways of different heights. The projecting wings on either side of the front or western portico have three Doric columns, smaller than those of the central porticoes. The northern wing, provided with windows, was used as a pinacotheca or picture gallery, but the southern wing was never completed, probably to avoid encroaching on the sacred precincts of the Temple of Nikè Apteros. The general appearance, showing the important position of the Propylæa as part of the world-famous group of Acropolis buildings, is shown in the view (p. iv).

TOMBS

The **Harpy Tomb, Xanthos** (B.C. 550) has boldly sculptured archaic reliefs of harpies or birds with the heads of women. It is one of the important tombs found in Asia Minor, and is in the British Museum.

The **Nereid Monument, Xanthos** (B.C. 370), generally considered to have been a trophy monument, consisted of a central chamber surrounded by an Ionic colonnade on a podium. The model in the British Museum has been designed from important fragments discovered by Sir Charles Fellows. Figures of nereids or marine nymphs, with their attributes, originally stood between the columns, and, with the friezes, acroteria, and pediments, are excellent specimens of the sculpture of the period in Asia Minor.

The **Mausoleum, Halicarnassos** (B.C. 353) (p. 113), the most famous of all tombs, and one of the seven wonders of the world, was erected to King Mausolos by his widow Artemisia, and from it is derived the title "Mausoleum," applied to monumental tombs. It consisted of a square podium, supporting a tomb chamber surrounded by Ionic columns and surmounted by a pyramidal roof, with a marble quadriga and group of statuary at its apex (p. 113 C, L). The early restoration of Newton and Pullan is shown in detail (p. 113 A-D, L), and various restorations (p. 113 E-K) have been made of this famous monument, based upon the ambiguous description of Pliny, but these do not agree with Prof. Lethaby's recent researches. The architects were Satyros and Pythios, and Scopas was the master sculptor. Portions of the frieze, the statues of Mausolos and Artemisia, with the horses, quadriga, and other fragments, are grouped together in the British Museum.

The **Lion Tomb, Cnidos** (p. 114 A–F) consisted of a square podium and Doric colonnade of engaged columns surmounted by a stepped roof crowned with a lion (whence the name of the tomb) now in the British Museum. The circular interior was roofed with a corbelled dome (p. 114 B).

The **Sarcophagus, Cnidos** (p. 114 J) is an interesting and beautiful example, taken from a tomb chamber, of the ornamental treatment given to a stone coffin hewn out of one block of marble and with sculptures of a late period.

The **Tomb of the Weepers, Sidon** (B.C. 350) (p. 114 K), now in the Museum at Constantinople, is a sarcophagus in the form of a miniature Ionic temple, with sculptured figures of mourners between the columns.

The **Alexander Sarcophagus** (B.C. 350) (p. 114 G, H), also found near Sidon, and now in the Constantinople Museum, is the most beautiful and best preserved of all. It is so called because marble sculptures on its sides

represent battles and hunting scenes of Alexander, and some of the original colour still remains on the sculpture.

There are also important rock-cut tombs in North Africa and in Asia Minor (p. 94 E), and reference has already been made to the Lycian Tombs (p. 52), of which the two brought to London by Sir Charles Fellows in A.D. 1842 are in the British Museum.

The **Stele** (p. 123 G) consisted of a slab of stone placed upright in the ground, like a modern headstone, carved in bas-relief, and generally terminated with an anthemion ornament; many of these can be seen in the British Museum (pp. 124 D, 125 D).

PUBLIC BUILDINGS

The restoration of Olympia (p. xxxvi B) gives a good idea of the distribution of buildings on this famous site.

The **Agora** (p. xxxvi), or open-air meeting-places for the transaction of business, were large spaces surrounded by stoæ or colonnades, giving access to the public buildings, such as temples, basilicas, stadia, and palæstræ or gymnasia.

Stoæ (pp. xxxvi, 75 C, 97 K) played an important part in the open-air life of the Greeks, and were formed to protect pilgrims visiting the shrines, to connect public monuments, and for shelter in open spaces. The most important were the Stoa Pœcile, or Echo Colonnade, Olympia (p. xxxvi B), about 300 ft. by 30 ft., the two at Epidauros to shelter patients at the shrine of Æsculapius, and the three at Delphi.

The **Stadion** was the foot racecourse in cities where games were celebrated, and it was eventually used for other athletic performances. It was usually straight at the end used for the starting-place, and semicircular at the other, and was always 600 ft. long, although the feet varied in length in different States. It was sometimes planned with its length skirting the side of a hill, so that the seats could be cut out of the hill slope as at Olympia (p. xxxvi B), Thebes, and Epidauros; or else it was constructed on the flat, as at Delphi, Athens, and Ephesus. The Stadion, Athens, commenced B.C. 331 and finished by Herodes Atticus, has recently been restored, and is said to accommodate between 40,000 and 50,000 people.

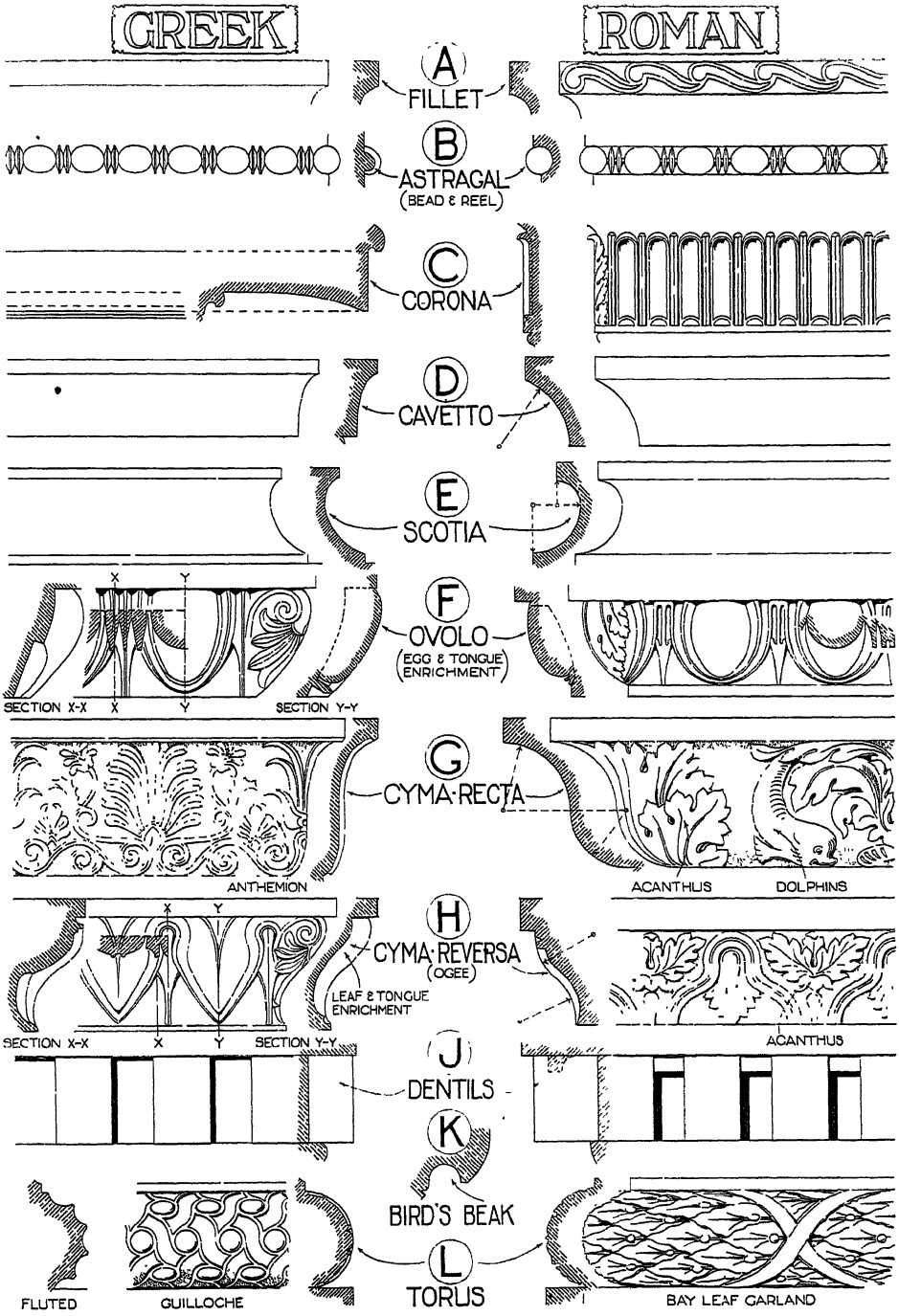
The **Hippodrome** was a similar type of building for horse racing, and was the prototype of the Roman circus. Probably the first mention of racing with horses is in Homer's "Iliad," XXIII, lines 212–650, referring to the chariot-races at the funeral games in honour of Patroclos. The four-horse chariot race seems to have been begun in the Olympic games as early as the 23rd Olympiad, and there were similar races at all the Greek national games.

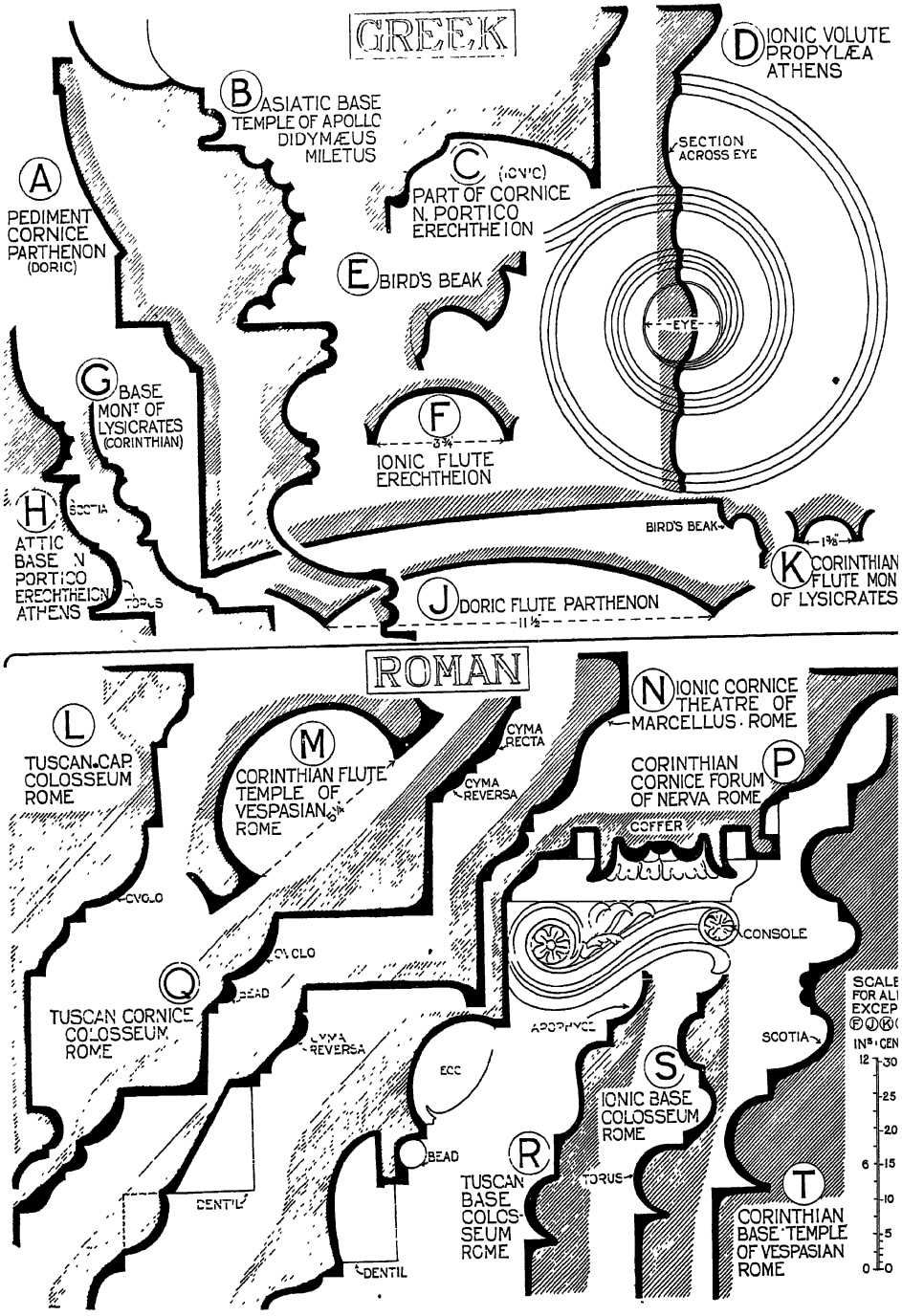
The **Palæstræ** or gymnasia, as at Olympia (p. xxxvi B), Ephesus, and Pergamon, were prototypes of the Roman thermæ, and comprised courts for athletes, tanks for bathers, exedræ for lecturers, and seats for spectators.

The "**Sanctuary of the Bulls,**" **Delos** (p. 123 C, E, F, H) is 219 ft. long by 30 ft. wide. It is an unusually shaped structure used in connection with the temple rites, and here, according to tradition, the religious dance of the Delian Maidens took place. There is a long hall with a central sunken area, and at the end steps lead down to a lower chamber through an entrance flanked by Doric columns with recumbent bulls carved on the capitals.

4. COMPARATIVE ANALYSIS

A. **Plans** (p. 76).—Temple plans with few exceptions, such as the Erechtheion (p. 98 F), were simple, well judged, nicely balanced, and


GREEK
ROMAN
A
FILLET
B
ASTRAGAL
(BEAD & REEL)
C
CORONA
D
CAVETTO
E
SCOTIA
F
OVOLO
(EGG & TONGUE ENRICHMENT)
SECTION X-X
SECTION Y-Y
G
CYMA·RECTA
ANTHEMION
ACANTHUS
DOLPHINS
H
CYMA·REVERSA
(OGEE)
LEAF & TONGUE ENRICHMENT
ACANTHUS
J
DENTILS
K
BIRD'S BEAK
L
TORUS
FLUTED
GUILLOCHE
BAY LEAF GARLAND


GREEK
A
PEDIMENT CORNICE PARTHENON (DORIC)
B
ASIATIC BASE TEMPLE OF APOLLO DIDYMÆUS MILETUS
C
(IONIC)
PART OF CORNICE N. PORTICO ERECHTHEION
D
IONIC VOLUTE PROPYLÆA ATHENS
SECTION ACROSS EYE
EYE
E
BIRD'S BEAK
F
3¾
IONIC FLUTE ERECHTHEION
G
BASE MONT OF LYSICRATES (CORINTHIAN)
H
SCOTIA
ATTIC BASE N PORTICO ERECHTHEION ATHENS
TORUS
BIRD'S BEAK
1⅜
K
CORINTHIAN FLUTE MON OF LYSICRATES
J
DORIC FLUTE PARTHENON
11½
ROMAN
L
TUSCAN CAP COLOSSEUM ROME
M
CORINTHIAN FLUTE TEMPLE OF VESPASIAN ROME
CYMA RECTA
CYMA REVERSA
N
IONIC CORNICE THEATRE OF MARCELLUS ROME
CORINTHIAN CORNICE FORUM OF NERVA ROME
P
COFFER
CONSOLE
CYCLO
Q
TUSCAN CORNICE COLOSSEUM ROME
BEAD
CYMA REVERSA
ECC
APOPHYGE
SCOTIA
S
IONIC BASE COLOSSEUM ROME
R
TUSCAN BASE COLOSSEUM ROME
TORUS
BEAD
DENTIL
DENTIL
T
CORINTHIAN BASE TEMPLE OF VESPASIAN ROME
SCALE FOR ALL EXCEPT P J K
INS CENS
12 30
25
20
6 15
10
5
0 0

symmetrical, but in private houses there was probably considerable variety of treatment as is seen at Athens, Delos, and elsewhere. Plans involving the use of the Orders were generally regular and but rarely extensive or complicated, though certain departures were made from the general rule, either for effect, as in Doric temples, when columns were placed nearer together at the angles (pp. 79 A, 126 E), or for practical purposes as in the Propylæa at Athens (p. 110 H), where the central intercolumniation was increased, possibly for the passage of chariots in the Panathenaic procession. Greek temples might be described as Egyptian temples turned inside out; for, whereas in an Egyptian temple the courts and columned halls were enclosed by a high girdle wall, in a Greek temple the single naos was surrounded by those external, open colonnades which are its special charm. The Greeks employed the circular plan for open-air theatres and occasionally for other buildings, such as the Tholos, Epidauros (p. 76 E), and the Choragic Monument of Lysicrates, Athens (p. 106 A), while the octagonal plan was adopted for the Tower of the Winds, Athens (p. 106 F).

B. **Walls.**—Walls were solidly constructed of blocks of stone or marble which largely determined their character (p. 104 A). These blocks were often held together by metal cramps without mortar and so the joints between the blocks had to fit with great accuracy, while the glistening wall surface was obtained by the laborious process of rubbing down by slaves. When marble was not abundant, coarse-grained limestone was sometimes faced with a fine marble stucco capable of taking a high polish, in order to produce the desired smooth surface.

The method of hollow wall-construction was sometimes used, as in the frieze of the Parthenon, to lessen the weight upon the architraves, and perhaps to economise material (p. 87 E, F). The base of a temple was always well defined by a stylobate of steps, giving real as well as apparent solidity to the structure (pp. 81 A, 87 B, 88). Cornices finished the top of the building or the upper part of the entablature, and in temples, which were one storey high, there were no intermediate cornices, although string courses or horizontal bands of moulding were sometimes introduced, as in the Temple of Zeus Olympius, Agrigentum (p. 82 L). Whereas in Egyptian temple architecture walls are the chief external features, in Greek temple architecture columns are the chief external features, and even the naos itself is screened by the ubiquitous Greek columns. Towers as such are unusual in Greek architecture, except along the lines of fortified walls, such as those at Messene, praised by Pausanias. There were a few monuments which were tower-like in character, such as the lofty Mausoleum at Halicarnassos (p. 113 C, L) and the Lion Tomb at Cnidos (p. 114, A, C), both of which had pyramidal roofs.

C. **Openings.**—Greek architecture was essentially a trabeated style, and openings were square-headed and spanned by a lintel. Trabeated construction necessitated severity of treatment and columns were expressly placed close together to support lintels or architraves of stone or marble, as these materials have little capacity to resist transverse strain. Openings are sometimes narrowed towards the top, as in the doorway of the Erechtheion (p. 115 D). Façades of windowless temples, which would otherwise have been monotonous, were varied by alternation of light and shade, produced by the succession of free-standing columns and the shadows in the openings between them.

D. **Roofs.**—The inclination of the pediments was governed by the slope of the roof, which in temples was carried by the naos wall and

surrounding colonnade, supplemented in larger buildings by columns in the naos, as at Pæstum (p. 81 B). The timber rafters of the roof were covered externally with thin marble slabs and the marble ceilings of the peristyle were enriched by lacunaria or panels (p. 79 E).

E. **Columns.**—Temples are one storey high, and columns, with their entablature, comprise the entire height of the buildings except in some interiors, as the Parthenon (p. 87 F) and the Temple of Poseidon, Pæstum (p. 81 B), where an upper range of columns was introduced into the naos to support the roof.

The Orders (p. 116), which have been fully dealt with, may be summarised as follows:

The Doric (p. 78) is the sturdiest of the Orders, and its finest examples are in the Parthenon and the Theseion (p. 89).

The Ionic (p. 96) was more slender, and two typical examples are in the Erechtheion (p. 100) and the Temple on the Ilissus (p. 99).

The Corinthian (p. 107), with its elaborate capital, was little used by the Greeks, the best-known examples being the Monument of Lysicrates, Athens (p. 108) and the Olympieion (p. 111) upon which the Romans founded their own special type of capital.

Caryatids (pp. 123 J, 863) and Canephora (pp. 123 D, 863) or draped female figures, probably suggested by the "Osiris" columns of Egypt (pp. 32 B, 38 H), were sometimes used as columns or supports, as at the Erechtheion, Athens (pp. 92 B, 123 J).

F. **Mouldings.**—Mouldings are an architectural device whereby, with the help of the light and shade they produce, definition is given to the salient lines of a building (pp. 119, 120). Thus the delicacy of moulded contours is in proportion to the strength of sunlight in any given country, always making due allowance for national tendencies and the possibilities of material. Greek love of refinement found full opportunity for expression in graceful mouldings in the sunny climate of Greece; the Roman character, in a somewhat similar climate, displayed itself in more pronounced mouldings; while in grey and sunless England mouldings became coarser to secure sufficient shadow to throw up their lines. Greek mouldings were refined and delicate in contour, due first to the fine-grained marble in which they were carved, and secondly to the clear atmosphere and continuous sunshine which produced strong shadows from slight projections. Though the sections of these mouldings were probably formed by hand, they approach very closely to various conic sections, such as parabolas, hyperbolas, and ellipses. As a general rule the lines of the carving on any Greek moulding correspond to the profile of that moulding and thus emphasise it by the expression of its own curvature in an enriched form. The examples given of mouldings taken from the Parthenon, Erechtheion, and elsewhere may be studied (pp. 119, 120).

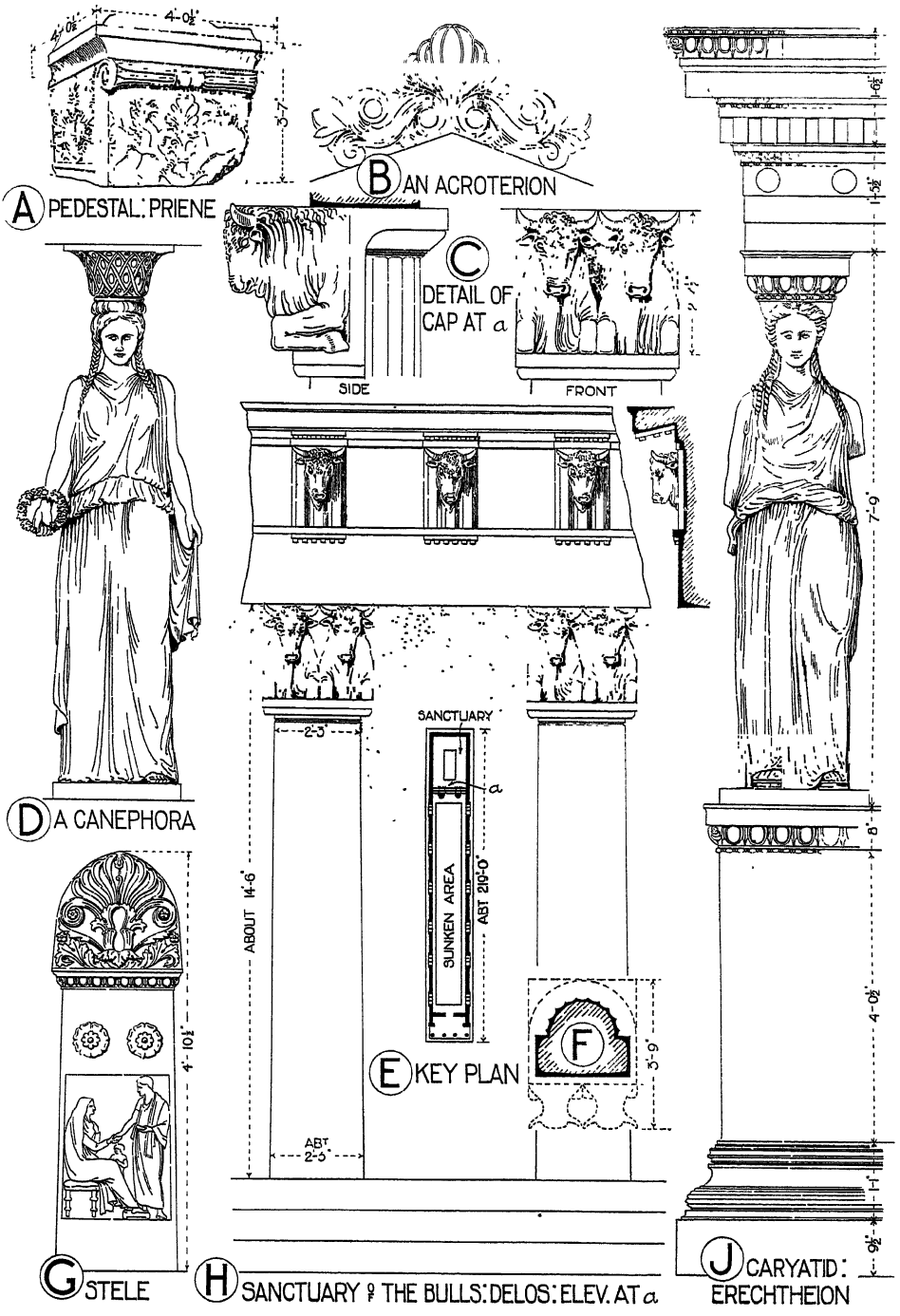
The following is a classified list of the most important Greek mouldings compared with Roman (p. 119).

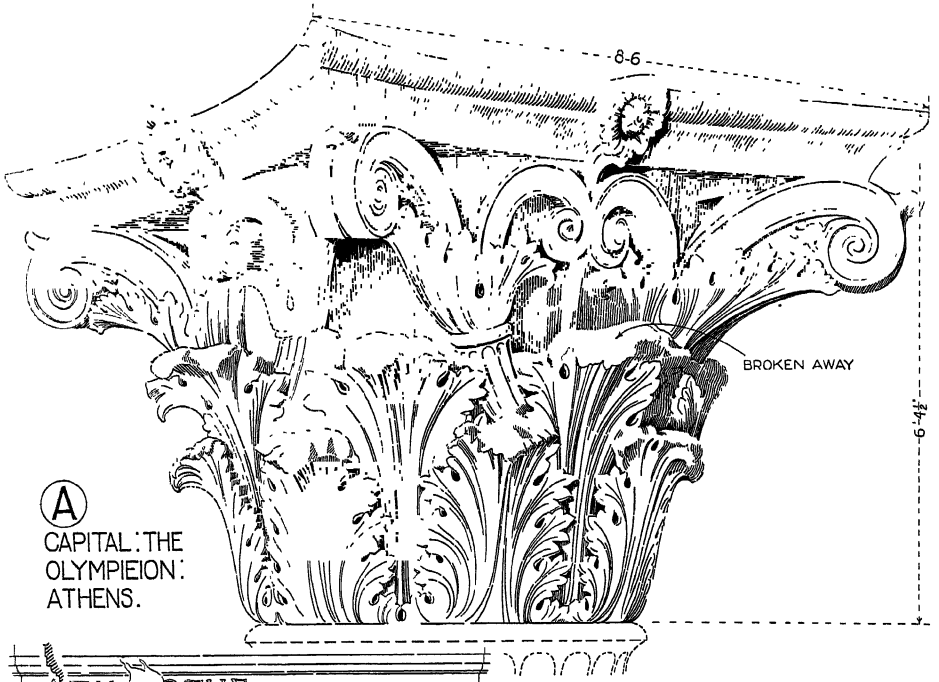
(*a*) The cyma recta (Hogarth's "line of beauty") which is often carved with honeysuckle ornament, whose outline corresponds with the section (pp. 119 G, 120 Q).

(*b*) The cyma reversa (ogee) when enriched is carved with the water-leaf and tongue (pp. 119 H, 120 N, Q).

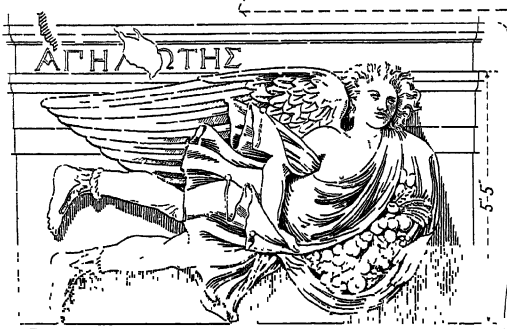
(*c*) The ovolo (egg-like) when enriched is carved with the egg and dart, or egg and tongue ornament (pp. 119 F, 120 L, Q).

(*d*) The fillet, a small plain face to separate other mouldings (p. 119 A), is usually without enrichment.


4-0½
3-7
A PEDESTAL: PRIENE
B AN ACROTERION
C DETAIL OF CAP AT a
SIDE
FRONT
D A CANEPHORA
SANCTUARY
a
2-3
ABOUT 14-6
SUNKEN AREA
ABT 21'0"
E KEY PLAN
F
3-9
ABT 2-3
G STELE
4'-10½
H SANCTUARY & THE BULLS: DELOS: ELEV. AT a
J CARYATID: ERECHTHEION
7-9
6"
4-0½
1'-1"
9½"



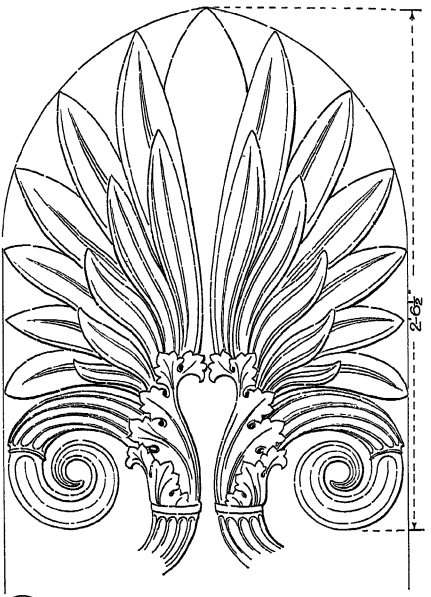
A CAPITAL: THE OLYMPIEION: ATHENS.



B SCULPTURE REPRESENTING E. WIND TOWER OF THE WINDS: ATHENS



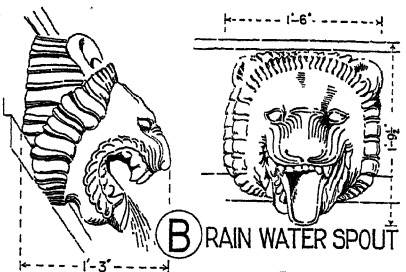
C SCULPTURE REPRESENTING N. WIND TOWER OF THE WINDS: ATHENS



D STELE HEAD WITH ANTHEMION



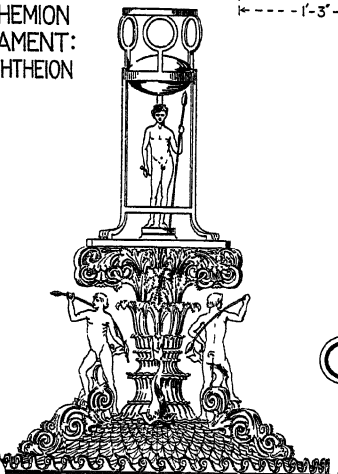
A ANTHEMION ORNAMENT: ERECHTHEION



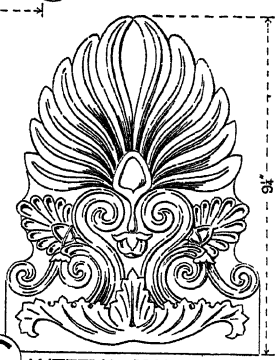
B RAIN WATER SPOUT



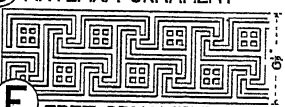
D STELE HEAD



E ROOF OF LYSICRATES MONUMENT



C ANTEFIXA ORNAMENT



F FRET ORNAMENT



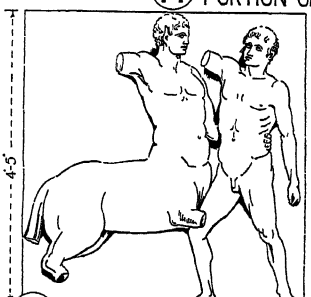
G PATERA



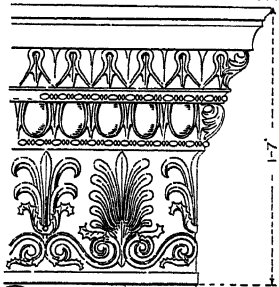
H PORTION OF PANATHENAIC FRIEZE : THE PARTHENON



J PATERA



K METOPE : PARTHENON

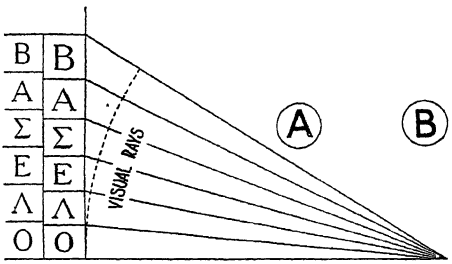


L ANTA CAP : ERECHTHEION

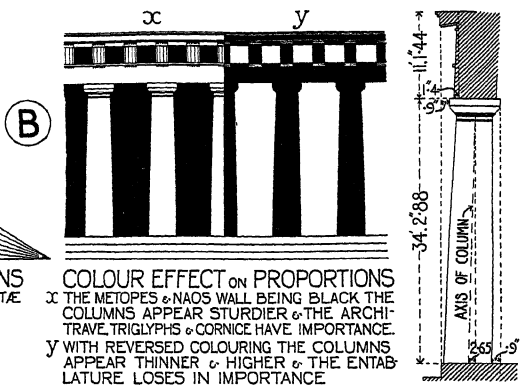


M METOPE : PARTHENON

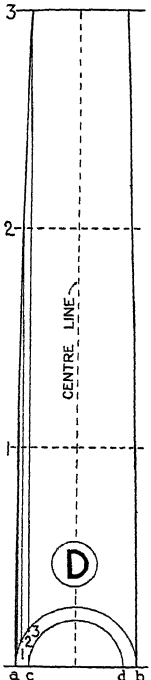
OPTICAL CORRECTIONS IN ARCHITECTURE



CORRECTION OF APPARENT PROPORTIONS
FROM AN INSCRIPTION ON THE FACES OF THE ANTÆ OF A TEMPLE AT PRIENE

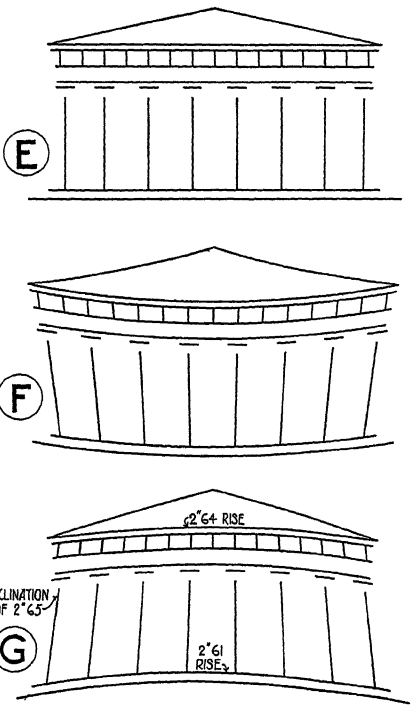


COLOUR EFFECT ON PROPORTIONS
x THE METOPES & NAOS WALL BEING BLACK THE COLUMNS APPEAR STURDIER & THE ARCHITRAVE, TRIGLYPHS & CORNICE HAVE IMPORTANCE.
y WITH REVERSED COLOURING THE COLUMNS APPEAR THINNER & HIGHER & THE ENTABLATURE LOSES IN IMPORTANCE



D METHOD FOR ENTASIS
a b c d ARE BOTTOM & TOP DIAMETERS RESPECTIVELY. DESCRIBE SEMICIRCLES ON THESE, & AT c ERECT PERPENDICULAR CUTTING LARGER ONE IN 3 DIVIDE SEGMENT a 3 & HEIGHT OF COLUMN INTO ANY NUMBER OF EQUAL PARTS - SAY 3 - & NUMBER - BOTH 1,2,3 FROM A. THRO' POINTS 1,2,3 IN SEGMENT ERECT PERPENDICULARS CUTTING CORRESPONDING DIVISIONS OF THE HEIGHT THRO' THE POINTS THUS OBTAINED DRAW CURVE

THE PARTHENON, ATHENS EAST FRONT

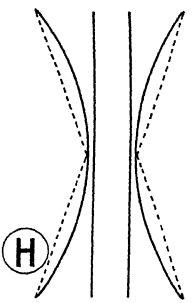


E THE TEMPLE FRONT AS IT APPEARS IN EXECUTION WITH CURVED HORIZONTAL LINES AND INCLINED VERTICAL FEATURES AS AT G.

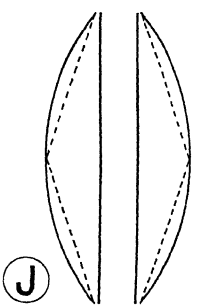
F THE TEMPLE FRONT AS IT WOULD APPEAR IF BUILT AS AT E WITHOUT OPTICAL CORRECTIONS

G THE TEMPLE FRONT ARRANGED WITH VERTICAL AXES INCLINING & WITH CONVEX STYLOBATE. ARCHITRAVE - ENTABLATURE & PEDIMENT PRODUCING RESULT AS AT E.

C THE PARTHENON
INCLINATION OF COLUMNS AND ENTABLATURE



PARALLEL STRAIGHT LINES HAVING CONVEX CURVES ON EITHER - SIDE APPEAR WIDER APART IN THE CENTRE



PARALLEL STRAIGHT LINES HAVING CONCAVE CURVES ON EITHER - SIDE APPEAR CLOSER TOGETHER IN THE CENTRE.

A SIMILAR EFFECT PRODUCED BY INCLINED - LINES AS INDICATED IN H & J BY DOTTED LINES

(*e*) The astragal or bead serves much the same purpose as the fillet, but approaches a circle in section. It is sometimes carved with the " bead and reel " or with beads, which, in fact, gave the name to the moulding (p. 119 B).

(*f*) The cavetto is a simple hollow (p. 119 D).

(*g*) The scotia is a deep hollow which occurs in bases, and is generally not enriched (p. 119 E).

(*h*) The torus is really a magnified bead moulding which, when enriched, is carved with the guilloche or plait ornament, or with bundles of leaves tied with bands (p. 119 L).

(*i*) The bird's-beak moulding occurs frequently in the Doric Order, and gives a deep shadow (pp. 119 K, 120 A, E).

(*j*) The corona, or deep vertical face of the upper portion of the cornice, was frequently painted with a Greek " fret " ornament (p. 119 C).

G. **Ornament** (pp. 123, 124, 125).—Greek ornament is specially refined in character, and on it architectural ornament of all succeeding styles has been based. The acanthus leaf and scroll play an important part in Greek ornamentation (p. 105 C). The leaf from which these were derived grows in the south of Europe in two varieties. The " acanthus spinosus," preferred by the Greeks, has pointed, narrow lobes, V-shaped in section with deeply drilled eyes giving a sharp, crisp shadow (p. 105 D). The " acanthus mollis," preferred by the Romans, has broad, blunt tips, flat in section (p. 105 E). The leaf was used principally in the Corinthian capital (p. 105), and is also found in the capital (pp. 105 G, 106) and crowning finial of the Choragic Monument of Lysicrates (p. 125 E). The scroll which accompanies the leaf and acts as a stalk is usually V-shaped in section with sharp edges. The anthemion, palmette, or honeysuckle ornament (p. 125 A) was a favourite Greek decoration, and was largely used to ornament anta capitals (p. 125 L), cyma recta mouldings (p. 119 G), and neckings of columns as in the Erechtheion (p. 93 D). It is also frequently employed on stele-heads and antefixæ (pp. 123 G, 124 D, 125 D).

Greek sculpture, which has never been excelled, may be classified as follows : (*a*) architectural sculpture, which includes friezes (pp. 85 N, 125 H), tympana of pediments (p. 86 C), acroteria at the base and summit of pediments (p. 86 A, B), sculptured metopes (pp. 85 A, C, 125 K, M), Caryatids (pp. 92 B, 123 J), and figure sculptures, as the " Gigantomachia " of the Altar of Zeus at Pergamon in Asia Minor ; (*b*) sculptured reliefs, as seen on the stele (p. 123 G) ; (*c*) free-standing statuary, consisting of groups, single figures, bigas (two-horse chariots) or quadrigas (four-horse chariots) (p. 113 C, L).

Colour, of which many traces are left, was largely used on buildings (p. 72). In many instances stone, brick, and even marble were covered with carefully prepared cement, to receive paintings or colour decoration, especially in buildings of the Doric Order, and this cement stucco was capable of such high polish that Vitruvius mentions that it would reflect like a mirror.

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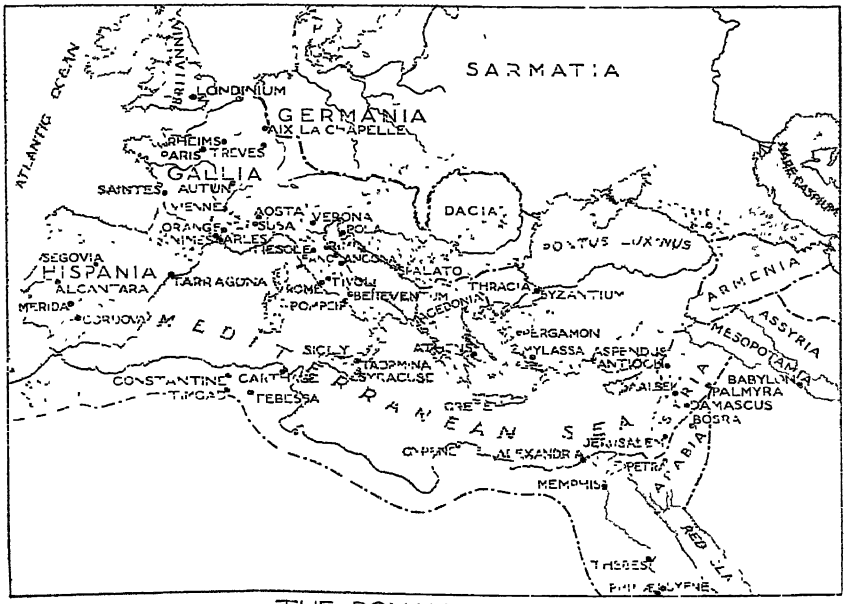
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THE ROMAN EMPIRE

ROMAN ARCHITECTURE

1. INFLUENCES

i. Geographical.—The comparative simplicity of the long coast-line of the Italian Peninsula forms a strong contrast to the complexity of the indented coast-lines of Greece and the innumerable islands of the Archipelago. Italy has few natural harbours and few islands along her shores. The great chain of the Apennines runs like a spine down the centre of Italy and much of the country is very mountainous, but it is not broken up into isolated little valleys to the same extent as is Greece. These clearly marked geographical differences between the countries of the Greeks and the Romans have their counterpart in equally clearly defined differences of national character. The central and commanding position of Italy in the Mediterranean Sea enabled Rome to act as an intermediary in spreading art and civilisation over Europe, Western Asia, and North Africa. In their Empire-building the Romans proceeded logically: they conquered first by war, dominated by force of character, and then ruled by laws and civilised by arts and letters. It was also natural that, under different geographical conditions, the methods adopted by Rome for extending her influence should have differed from those of Greece. The Romans were not a seafaring people like the Greeks, and did not send out colonists in the same way to all parts of the then-known world: they depended for the extension of their power, not on colonisation, but on conquest. The Roman power was built up, first of all in Italy itself, by a gradual absorption of little States, at a time when there were few rival cities

and when small towns were not over-tenacious of their separate independence; whereas neither Athens nor Sparta was able to carry out a similar process of absorption, owing to the fierce independence of the small Greek cities, protected as they were in their isolated and well-nigh impregnable valleys. The Roman Empire was ultimately not confined geographically to Italy, but, as shown in the map (p. 129), included all those parts of Europe, North Africa, and Western Asia which constituted the then-known world.

ii. Geological.—The geological formation of Italy differs from that of Greece, where the chief and almost the only building material is marble; whereas in addition to marble the Romans could procure terra-cotta, stone, and brick, all of which they used, even for important buildings. In the neighbourhood of Rome there was travertine, a hard limestone from Tivoli; tufa, a volcanic substance of which the hills of Rome are mainly composed; peperino, a stone of volcanic origin from Mount Albano; lava from volcanic eruptions, besides excellent sand and gravel. The building material, however, which led to great structural innovations was concrete formed of pozzolana, a clean, sandy earth found in thick strata, which has the peculiar property, when mixed with lime, of forming exceedingly hard and cohesive concrete which rendered possible some of the finest examples of Roman architecture. Not only domes and vaults but also walls were frequently formed of this concrete, and they were faced with brick, stone, alabaster, porphyry and other marbles, hewn from countless quarries by armies of slaves. Pliny records that enormous quantities of white and coloured marbles were imported from all parts of the Empire to special wharves on the Tiber and were then worked up by gangs of slaves and convicts. Roman architecture, as it spread over the whole of the then-known world, was naturally variously influenced by the materials found in the widely differing localities where it planted itself; but concrete, which in conjunction with brick and stone casing was the favourite material, helped to give uniformity of style to Roman architecture throughout the Empire, and thus local geological influences were to a certain extent at a discount. In Syria, however, as at Baalbek, also in Egypt, as at Philæ, the yield of the quarries was so unlimited that enormous stone blocks took the place of Roman concrete, and thus the traditional usage of those countries prevailed.

iii. Climatic.—North Italy has the climate of the temperate region of Europe, Central Italy is genial and sunny, while the south is almost tropical. This variety of climatic conditions is sufficient to account for diversity of architectural features and treatment in the peninsula itself, while the differing climates of the various Roman provinces from England to North Africa, and from Syria to Spain, produced local modifications in details, though Roman architectural character was so pronounced and assertive as to leave little choice in general design.

iv. Religious.—The religion of ancient Rome was part of the constitution of the State, and even the worship of the gods, which were adopted from the Greeks (p. 66) under Latin names with attributes to suit Roman religious requirements, was eventually kept up only as a matter of State policy. The Emperor ultimately received divine honours and may almost be described as the head of the Pantheon of deities of the various provinces which came under the tolerant and widespread Roman rule. Religious feeling had not so strong a hold on the Romans as on the Greeks and did not enter in the same degree into the life of the people; nor do we find that it

formed the bond of union among the different provinces of the Empire. The position of the Emperor as Pontifex Maximus is rather indicative of the glorification of the Empire than of religion, and officialism stamped its character even on temple architecture. The principal buildings are not only temples, as in Greece, but also public buildings which were the material expression of Roman rule and Imperial power. Sacerdotalism had no place in Roman religion and the priests were not, as in Egypt, a powerful and privileged class, but only performed the sacrifices, while Augurs ascertained from omens the will of the gods. Every house, whether palace, villa, or "domus," had an altar to the Lares or family gods, and ancestor worship was a recognised part of religious rites; so it came about that Vesta, goddess of the hearth, was exalted to a high position in the Roman pantheon of gods, and vestal virgins, attached to the temples of Vesta, were of greater importance than the ordinary priests of sacrifice.

v. Social.—In early times Etruria in the centre of Italy was occupied by the Etruscans, probably an Aryan people who appear to have settled there before authentic history begins, and who were great builders (p. 133). The Greeks had colonies in the south which were included under the name of "Magna Græcia." Italy was not inhabited by one race only, but by many races. In Cisalpine Gaul there were Ligurians, Umbrians, and Etruscans. The remainder of Italy was originally occupied by Pelasgians or tribes of the Aryan race who had separated from the Celts, Teutons, and others, and who had been part of the same race that originally inhabited Greece. The early form of government in Italy resembled that of Greece, and towns or districts were joined together in leagues. The government of Rome was at an early period carried on by chosen kings (B.C. 750–500) aided by a popular assembly, but about B.C. 500 Rome became a Republic. On Pompey's defeat at Pharsalia, Julius Cæsar remained without a rival, but was murdered in B.C. 44, when there followed a period of great confusion. Then came the Triumvirate, consisting of Marcus Antonius, Caius Octavius (great-nephew of Julius Cæsar), and Marcus Æmilius Lepidus, who were opposed to Brutus and Cassius and eventually defeated them. On the defeat of Marcus Antonius at Aktion (B.C. 31) Caius Octavius commenced to reign, and when the need for centralised government of distant provinces resulted in the formation of the Empire he received the title of "Imperator" and in B.C. 27 that of "Augustus," afterwards used as a surname by all Roman Emperors. The Augustan age was one of the great eras in the world's history, like the Periclean age in Greece, the Elizabethan age in England, and the nineteenth century throughout Europe. At such epochs a new spring seems to well up in national and individual life, vitalising art and literature. It was indeed the boast of Augustus that he found Rome a city of bricks and left it a city of marble. The poets Virgil (B.C. 70–19), Horace (B.C. 65–8), Ovid (B.C. 43—A.D. 17), and Livy the historian (B.C. 59—A.D. 17), all flourished during this great period. The verses of Virgil and Horace show that the population flocked into the cities and disliked rural life, so that the land gradually went out of cultivation and the people depended on imported corn. Following Augustus, who died A.D. 14, came a line of famous Emperors, of whom Nero (A.D. 54–69), Vespasian (A.D. 69–79), Trajan (A.D. 98–117), Hadrian (A.D. 117–138), Septimius Severus (A.D. 192–211), Caracalla (A.D. 211–217), and Diocletian (A.D. 284–305) were the greatest patrons of architecture. The "Building Acts" of Augustus and of his successors, Nero and Trajan, show the controlling influence of the

State on architecture. Then ensued a period when a turbulent populace within the Imperial City, and the huge armies required to keep in check the barbarian tribes on every frontier, dominated the government. Emperors were no sooner chosen than they were murdered, and social chaos weakened the political power of the Empire. The social life of the Romans is clearly revealed in their architecture—there were thermæ for games and bathing, circuses for races, amphitheatres for gladiatorial contests, theatres for dramas, basilicas for lawsuits, State temples for religion, and the " domus " for the family life, while the Forum was everywhere the centre of public life and national commerce. Amidst all this diversity of pursuits there is one consistent trait running through all Roman life, and this is that capacity for obedience which was the basis alike of society and the State. The *patria potestas,* or supreme power of the father, was the foundation-stone of family life, and out of their obedience to authority, whether to the head of the household, or to censors in the State, the Romans developed their capacity as law-makers, and through this one characteristic they have left a special mark on the world's history. In the Roman social system there were only patricians, plebeians and slaves, and no middle class. Roman women were held in high respect, family life was protected, and the Temple of Vesta, the most sacred spot in Rome, has recorded for all time the sacredness attached by the Romans to their family hearth.

vi. Historical.—The foundation of Rome is of uncertain date, but is generally taken as B.C. 750, and until B.C. 500 its development and destinies were in the hands of the early kings. The Republic which followed engaged in many wars, conquering several Etruscan cities, but was defeated in B.C. 390 by the Gauls, who continued for some time to hold the northern part of Italy. About B.C. 343 began the Roman conquest of Italy, which in about sixty years resulted in the dominion of one city over many cities. Then came wars with peoples outside Italy, and Pyrrhus, King of Epirus, was the first to be subdued. The first Punic war (B.C. 264–241) against Carthage brought about the annexation of Sicily as the first Roman province. The second Punic war (B.C. 218–201) was the most severe struggle in which the Romans had engaged ; for Hannibal, the great Carthaginian general, entered Italy from the north, defeated the Roman armies, and maintained himself in Italy until recalled to meet a counter-attack of the Romans, under Scipio, upon Carthage itself. The third Punic war (B.C. 149–146) ended in the destruction of Carthage, which with its territory became a Roman province in Africa. The conquest of Macedonia (B.C. 168) and of Greece (B.C. 146) added two more provinces to the Roman Empire, and also stimulated the importation of Greek artists and art into Italy. Greece, in its turn, formed a stepping-stone for the Romans to Western Asia, which was gradually subdued till in B.C. 133 it also became a province of Rome. With the conquests of Syria (B.C. 190) and Spain (B.C. 150) the Roman Empire extended from the Euphrates to the Atlantic, while Cæsar's campaigns in Gaul (B.C. 59) made the Rhine and the English Channel its northern boundaries, until in B.C. 55 Cæsar conquered Britain, and in B.C. 30 Egypt too was added to the Empire. Then later, when the Empire had reached its greatest extent, discontent at the centre and barbarian attacks on the frontiers led to that weakening of authority which resulted in its decline and final fall. Constantine (A.D. 300–337) removed his capital to Byzantium in A.D. 324 as a more convenient centre for the extended Empire, but in A.D.

365 the Roman Empire was divided into East and West with two Emperors, and the year A.D. 475 marks the end of the Western Roman Empire by the election of Odoacer as the first King of Italy.

2. ARCHITECTURAL CHARACTER

ETRUSCAN ARCHITECTURE

(B.C. 750—B.C. 100)

The Etruscans, who were the early inhabitants of Central Italy, were great builders, and their methods of construction influenced Roman architecture in a marked degree. Etruscan architecture, which dates from about B.C. 750, is specially notable for the use of the true or radiating arch, while walls are of solid cyclopean masonry, in which huge masses of stone are piled up without mortar. Examples of Etruscan buildings and other remains are referred to later (p. 137).

ROMAN ARCHITECTURE

(B.C. 146—A.D. 365)

The Romans adopted the columnar and trabeated style of the Greeks and developed also the arch, vault, and dome of the Etruscans. This combined use of column, beam, and arch is the keynote of the Roman style in its earliest stages. The Colosseum, Rome (p. 164), everywhere throughout its structure, displays these two features in combination, for piers strengthened and faced by attached half-columns support arches, which in their turn carry the entablature. In works of an engineering character, such as aqueducts, the arch was supported on piers without the facing column. Thus the Orders of architecture which, as used by the Greeks, were essentially constructive were frequently employed by the Romans as decorative features which could be omitted and even at times lost their original use, although the Romans also used them constructively in temple colonnades and basilicas (p. 157 A).

The Doric, Ionic, and Corinthian Orders of architecture were used by the Greeks (p. 72), and the Romans added the Tuscan and Composite (p. 191), making five in all. The Tuscan Order (p. 757 B) is a simplified version of the Doric Order, about 7 diameters high, with base, unfluted shaft, and simply moulded capital, and with a plain entablature, as seen in the Colosseum (p. 164), and as used by a Renaissance architect in S. Paul, Covent Garden, London (p. 716). The Composite Order of the Romans has a capital which is a combination of the Corinthian and Ionic capitals, and was used largely in triumphal arches to give an ornate character. Vitruvius, the Roman authority on architecture in the time of Augustus, gives the proportions of the Tuscan, Doric, Ionic, and Corinthian Orders, but does not mention the Composite Order, which was evolved later. The proportions of the various Orders were studied in the Renaissance Period by famous architects, such as Palladio, Vignola, and Sir William Chambers (p. 757).

Temples were the predominating buildings of the Greeks and were of one storey, but the complex civilisation and varied needs of the Romans introduced other types and necessitated the use of several storeys which were frequently ornamented, as in the Colosseum, by attached half-columns superimposed one above the other. Thermæ, temples, amphitheatres, aqueducts, bridges, tombs, and basilicas all testify to the great constructive

ability of the Romans, whose majestic buildings are in accord with the grandeur of Roman Imperial power.

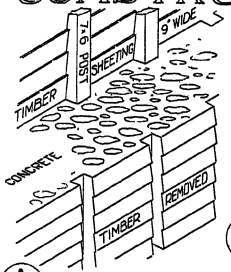
The Romans adopted the Greek method of using large blocks of stone without mortar during the Republic, but their practical mind eventually hit upon greater economy of materials by the use of concrete, a hard composition which consists of small fragments of stone, such as tufa, peperino, marble, pumice-stone, or even broken bricks, mixed with lime. The Romans employed local slaves, liable to statute labour on public buildings, as well as the soldiers of the Roman legions—for unskilled labour under supervision sufficed—to mix the liquid concrete to the right consistency for pouring between boards to form walls (p. 135 A) or for spreading over temporary timber centering or permanent brick centering to solidify into arches and vaults (p. 135 E). This extended use of concrete originated a new constructive system which was adapted with rare sagacity to diverse types of important buildings.

Roman walls, both of stone and concrete, are of special character and must be described in detail. Walls of " opus quadratum," i.e. rectangular blocks of stone, with or without mortar joints but frequently secured with dowels or cramps, still continued in use. Concrete, both unfaced and faced, was largely employed, (*a*) unfaced for foundations, and (*b*) faced for walls, of four varieties, viz. : (i) Concrete faced with " opus incertum," i.e. irregular-shaped stones (p. 135 B). This was mainly used in the first and second centuries B.C. (ii) Concrete faced with " opus reticulatum " (p. 135 C), so-called because the joints were in diagonal lines, like the meshes of a net (*reticulum*). (iii) Concrete faced with " opus testaceum," i.e. with bricks (*testæ*) triangular on plan and about 1½ ins. thick (p. 135 D), used from the time of the Republic till the end of the Western Empire. (iv) Concrete faced with " opus mixtum," which consisted of bands of tufa introduced at intervals in the ordinary brick facing.

Concrete was a manufactured article, and as such was not special to any country and could be used in every part of the Empire ; thus throughout the Roman dominions it gave uniformity and similarity to the buildings, whose character was thus largely independent of local conditions.

The character of Roman architecture depended largely on the extended use of vaulting inherited from the Etruscans and standardised as a structural system. Concrete vaults were erected which were never equalled in magnitude till the introduction of steel for building in the nineteenth century. The adoption of concrete and the method of its use was far-reaching in its results, as structures of complicated plan were easily roofed by vaults of various forms, supported on centering or temporary wooden framework till the concrete had set. Sometimes such vaults were constructed, according to Choisy, of brick ribs with concrete filling (p. 135 E). The various vaults used in Roman buildings were as follows (p. 135) : (*a*) The semicircular or waggon-headed vault, otherwise known as the " barrel " or " tunnel " vault, was borne throughout its length on the two parallel walls of a rectangular apartment (p. 302 A). (*b*) The cross-vault (pp. 302 B, 303 A), which was formed by the intersection of two semicircular vaults of equal span, was used over a square apartment and the pressure was taken by the four angles. When cross-vaults were used over long halls or corridors, the hall was divided by piers into square bays, each of which was covered with a cross-vault, which allowed of the insertion of windows in the upper part of the walls as in the tepidarium of the Thermæ of Caracalla (p. 135 L) and

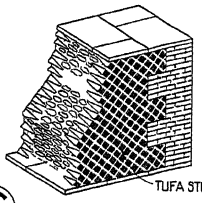
CONSTRUCTION OF WALLS AND ARCHES



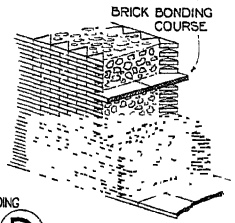
A CAST CONCRETE WALL



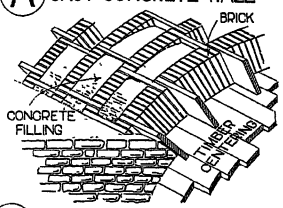
B OPUS INCERTUM



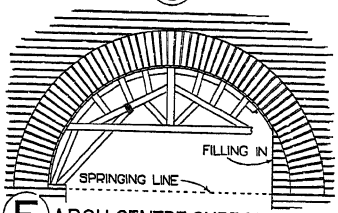
C OPUS RETICULATUM



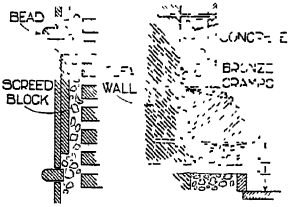
D OPUS TESTACEUM



E VAULT CONSTRUCTION

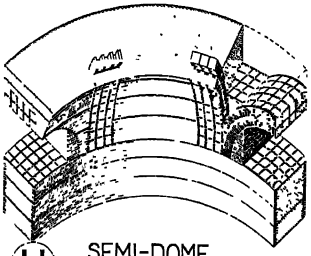


F ARCH CENTRE SUPPORTED AT SPRINGING

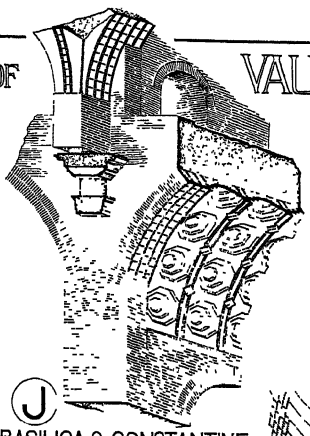


G METHODS OF FIXING MARBLE FACINGS

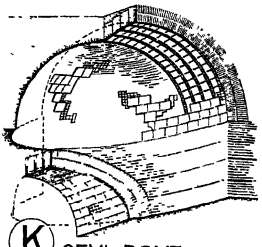
CONSTRUCTION OF VAULTS AND DOMES



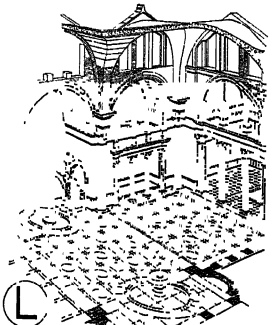
H SEMI-DOME THERMÆ OF AGRIPPA



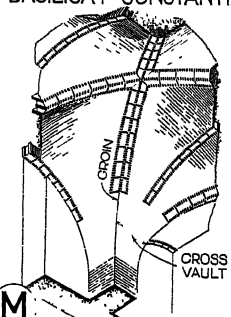
J BASILICA OF CONSTANTINE



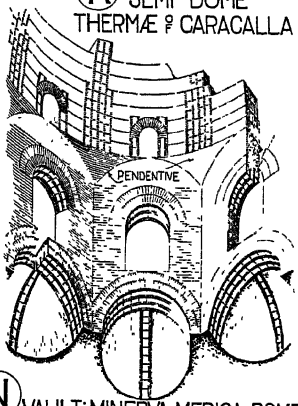
K SEMI-DOME THERMÆ OF CARACALLA



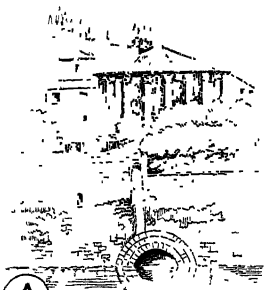
L VAULT OF TEPIDARIUM THERMÆ OF CARACALLA: ROME



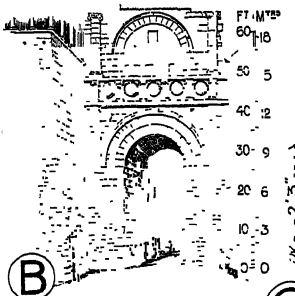
M THERMÆ OF DIOCLETIAN



N VAULT: MINERVA MEDICA ROME



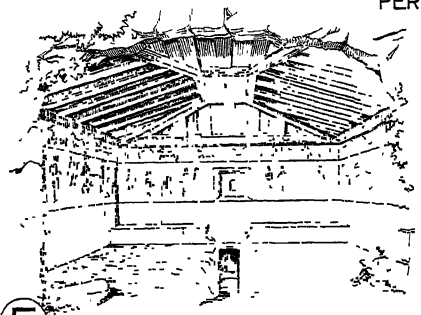
A CLOACA MAXIMA: ROME



B ARCH OF AUGUSTUS PERUGIA



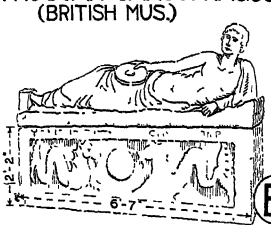
C ETRUSCAN SARCOPHAGUS (BRITISH MUS.)



F ETRUSCAN TOMB: CORNETO: INTERIOR

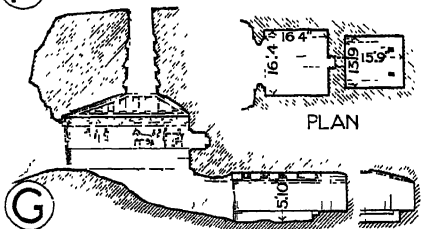


D CAPITAL ETRUSCAN TOMB: VULCI (BRITISH MUS.)



E ETRUSCAN SARCOPHAGUS (BRITISH MUS.)

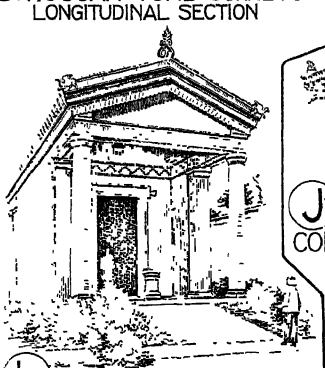
ETRUSCAN TEMPLE OF JUNO SOSPITA: LANUVIUM



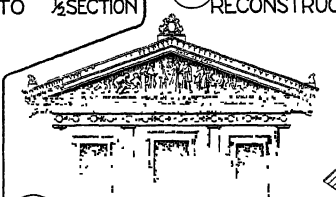
G ETRUSCAN TOMB: CORNETO ½SECTION LONGITUDINAL SECTION



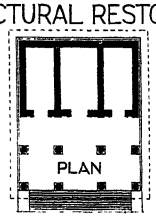
H TERRA-COTTA ROOFING RECONSTRUCTED AT BRITISH MUSEUM

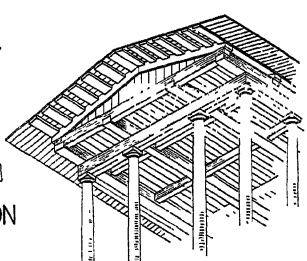


L ETRUSCAN TEMPLE RECONSTRUCTED IN THE COURT OF VILLA OF POPE JULIUS: ROME



J CONJECTURAL RESTORATION





K ROOF CONSTRUCTION OF ETRUSCAN TEMPLE (RESTORED)

the Thermæ of Diocletian, Rome (p. 161 A). The lines of intersection of these cross-vaults are known as "groins." (*c*) Hemispherical domes or cupolas (*cupa* = a cup) (p. 154) were used over circular structures, and semi-domes for exedræ or semicircular recesses (p. 135 H, K).

In all these vaulting forms concrete was the important factor, for, owing to its cohesive power, vaults and domes of enormous size were daringly constructed, and as they were cast in one solid mass, and had the rigidity of a porcelain cup, there was little or no lateral thrust. In the Thermæ of Caracalla (p. 135 L) and the Basilica of Constantine (p. 135 J) brick arches or ribs were embedded, probably as permanent centering, in the concrete vaults, especially at the "groins" as in the Thermæ of Diocletian (p. 135 M), but they sometimes penetrate only a few inches into the thick concrete. With the use of concrete, decoration had little connection with construction; for concrete was a material which required a facing, both for protection and decoration, and walls of concrete were sheathed externally and internally with marble, stone, brick, or mosaic, and these materials merely formed an appropriate finish to the structure, thus differing essentially from the homogeneous marble walls of Greek architecture. Besides many-coloured marbles, cements and stuccoes ("opus albarium") were also frequently used for wall surfaces, and the final coat was polished. Mural paintings also were executed on prepared stucco, and were of different types, such as fresco, tempera, varnish, and caustic painting.

Marble, alabaster, porphyry, and jasper, when applied to a thick cement backing, were usually attached to the walls by iron or bronze cramps. Mosaics were used to ornament not only walls and vaults, but also floors. They are divided by Middleton into: (*a*) "Opus tesselatum" ("vermiculatum") made of square tesseræ of stone, marble, or many-coloured glass to form patterns or even pictures. (*b*) "Opus sectile" ("scutulatum") of tesseræ of marble, porphyry, or glass cut into shapes to form the pattern, and of this "opus Alexandrinum" is a very rich variety. (*c*) "Opus spicatum" made of paving bricks set in herring-bone pattern. Glass mosaics, sometimes forming elaborate figure pictures, were used to decorate walls and vaults, but not floors. Gilded bronze covered roofs of important buildings, such as the Pantheon (p. 149).

The abundance of statues brought from Greece led to the formation of wall niches for their reception, and these were either semicircular or rectangular, and were occasionally flanked by columns supporting a pediment, to form a frame for the statue, or were fronted by a screen of columns, as in the Pantheon (pp. 153 B, 154 B).

3. EXAMPLES

ETRUSCAN ARCHITECTURE

The character of Etruscan architecture has been referred to (p. 133). The remains, which consist chiefly of tombs, city walls, gateways, bridges, and aqueducts, were similar in character to early Pelasgic work (p. 72).

The **Cloaca Maxima, Rome** (c. B.C. 578) (p. 136 A), constructed to drain the valleys between the hills of Rome, has a semicircular vault of peperino stone, 11 ft. in span, of three concentric rings of voussoirs, each 2 ft. 6 ins. high, forming probably the oldest example in Europe of true arch construction, with radiating joints.

The **Arch of Augustus, Perugia** (p. 136 B), is so called because the part above the frieze was added by Augustus. The Arch forms part of the old Etruscan walls, about two miles long, surrounding the ancient city, and is the best existing example of Etruscan masonry. It is built of large blocks of travertine stone without mortar, surmounted by a frieze resembling the Doric with triglyphs represented by dwarf Ionic pilasters.

The **Temple of Jupiter Capitolinus, Rome** (B.C. 509) (p. 139 A), the most important example of this type of building, had its cella divided into three chambers for statues of Jupiter, Minerva, and Juno, and was nearly square on plan, with widely spaced columns to support timber architraves. It was burnt in B.C. 83, and rebuilt by Sulla, who here made use of some of the marble Corinthian columns taken from the Olympieion, Athens (p. 111).

The **Temple of Juno Sospita, Lanuvium** (p. 136 H, J) is conjecturally restored from the description by Vitruvius (Bk. IV, chap. vii). The plan has three cells for three deities, and a front portico with two rows of four columns, widely spaced and approached by walled-in steps—a type of temple plan afterwards adopted by the Romans, and in contrast to the Greek type. The restored elevation (p. 136 J) shows the steps between flanking walls and the portico columns supporting pendant slabs and pediment. The roof carpentry of an Etruscan temple is included in this reconstruction (p. 136 K), and the terra-cotta roof covering of this Temple has been set up in the British Museum (p. 136 H), while an interesting modern version of the portico is seen in S. Paul, Covent Garden, London (p. 716).

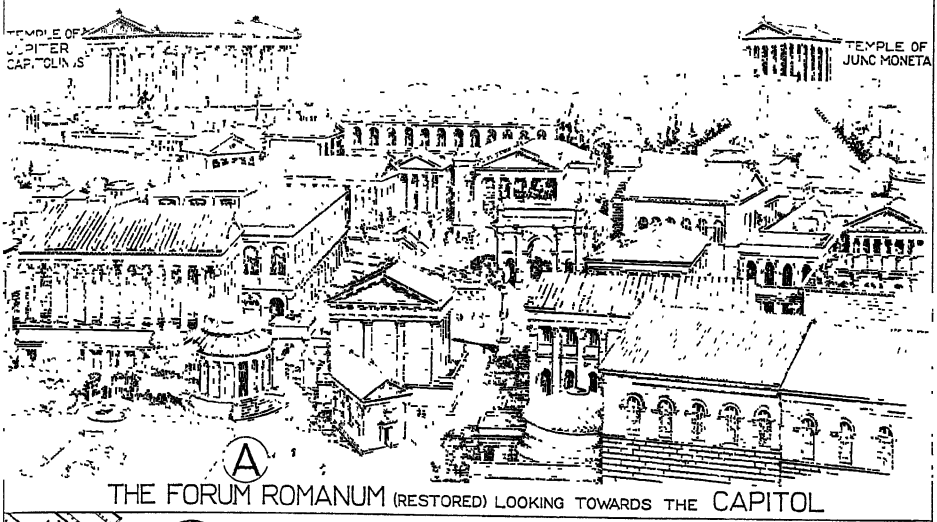
The **Temple, Alatri** (p. 136 L), remains of which were found in A.D. 1882, has been re-erected in the court of the Villa of Pope Julius, Rome. This small Etruscan temple rests on a podium, and a sloping ramp gives access to a portico of two columns from which the central doorway opens into the cella. The typical entablature of enriched terra-cotta, pediment with acroteria, and eaves with antefixæ, resemble those from Lanuvium.

The **Etruscan Tomb, Corneto** (p. 136 F, G), between Pisa and Rome, is one of twenty-three rock-cut tombs at that place, most of which retain their ancient painting, although they have been rifled for the trinkets they contained. The entrance leads into a mortuary chapel, somewhat resembling the atrium of an Etruscan house as described by Vitruvius, with walls covered with paintings, and with a roof formed in imitation of rafters sloping up to the central opening which admits light through a vertical shaft. A doorway from the mortuary chapel leads to a chamber behind at a lower level. A good idea of one of these Etruscan tombs can be obtained from the reconstruction of the Tomb at Bomazzo in the British Museum.

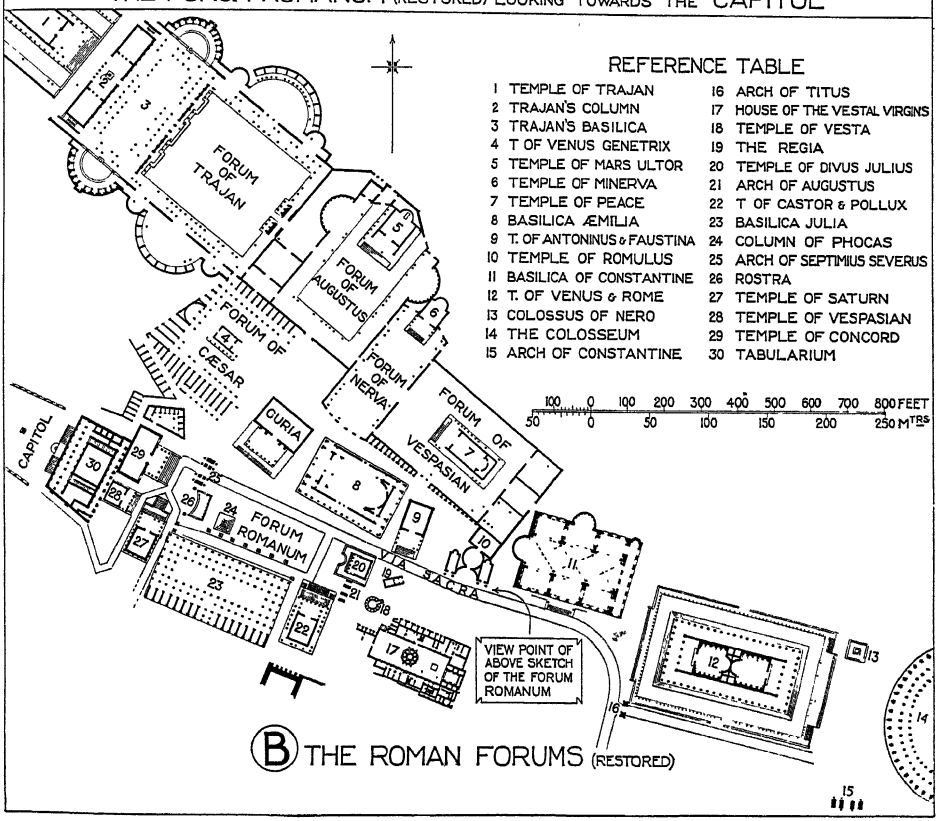
The **Necropolis, Cerveteri,** contains a number of Etruscan tombs of which that known as the Grotta Regulini-Galassi is one of the most interesting.

The **Etruscan Tomb, Vulci,** found A.D. 1833, of which there is a reconstruction in the British Museum, shows that many of these tombs were adorned with architectural features of importance. Two crouching lions (guardian spirits) originally flanked the entrance of the tomb. The walls have paintings with portrait figures in rich colours, and the short, sturdy column has a large capital of undeveloped Corinthian type (p. 136 D).

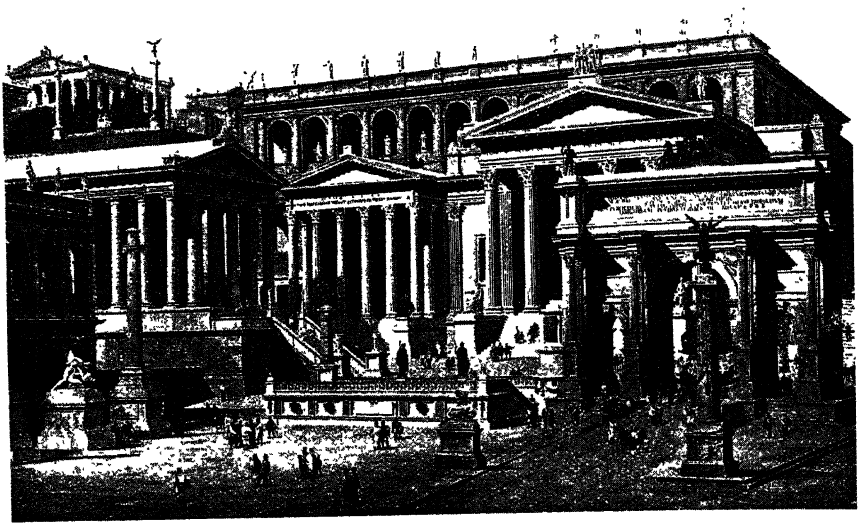
The **Etruscan Sarcophagus** in the British Museum (p. 136 E) is typical of numbers found in Etruria which are now in various museums. It has reliefs of marine monsters on the side, and a reclining figure holding the



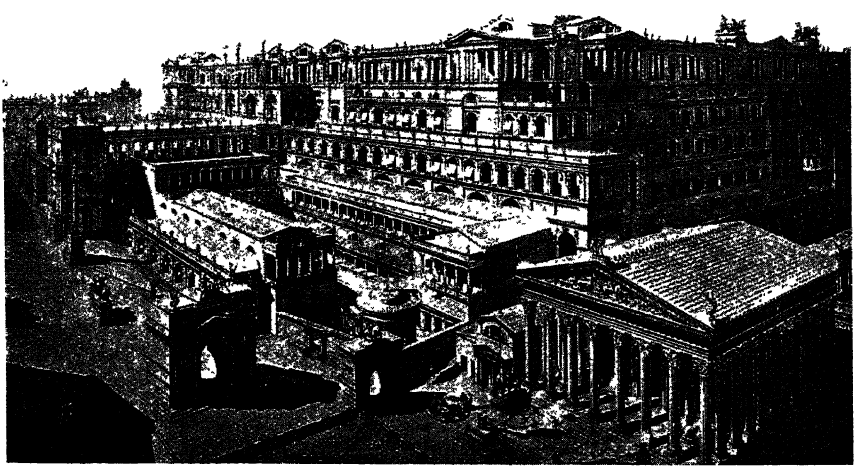
A THE FORUM ROMANUM (RESTORED) LOOKING TOWARDS THE CAPITOL



B THE ROMAN FORUMS (RESTORED)



A. The Roman Forum (restored), looking towards Tabularium



B. The Roman Forum (restored), looking towards Palatine

plate for the coin to be paid to Charon for ferrying the departed across the Styx.

The **Sarcophagus, Cerveteri,** now in the British Museum (p. 136 C), is supported on winged figures, and has two reclining figures on the lid. The sides of the sarcophagus are sculptured in low relief, that on the front showing a contest between two warriors.

ROMAN ARCHITECTURE

Examples of Roman architecture are found not in Italy only, but wherever Roman government extended, as at Nîmes and Arles in France ; Tarragona and Segovia in Spain ; Trèves and Aix-la-Chapelle in Germany ; Constantine and Timgad in North Africa ; Baalbek and Palmyra in Syria, besides Silchester and Bath in England (p. 319).

FORUMS

The forum, corresponding to the agora in a Greek city, was a central open space used as a meeting-place, market, or rendezvous for political demonstrations, like the French " place," the Italian " piazza," the English market-place, and Trafalgar Square, London. There were several forums in Rome, all very similar in plan (p. 139 B). All were designed to meet the requirements of Roman citizens, and with the surrounding buildings they reflect not only the religion, law, and commerce, but also the busy corporate life of the city, which was much the same whatever the form of government, whether of elected Kings, Republic, or Empire (p. 131).

The " **Forum Romanum,**" **Rome,** the oldest and most important of all, was laid out in the valley between the seven hills of the Imperial City, and was used in early times as a hippodrome, and for contests which later took place in amphitheatres. The chief public buildings were grouped around it, and its appearance in the heyday of ancient Rome, adorned with pillars of victory and statues and surrounded by porticoes, colonnades, temples, basilicas, and shops, must indeed have been imposing (pp. 139, 140).

The **Forum of Trajan, Rome** (A.D. 98–117) (p. 139 B), was the most extensive, and others were planned by Julius Cæsar, Augustus, Vespasian, and Nerva.

Besides these general forums, others, such as the " Forum Boarium," served as markets for special purposes. Pompeii, and indeed any town of importance, followed the example of Rome and had a forum as a centre of civic life. The forums of Rome and of the Roman provinces are early instances of well-considered town-planning, and were found even in the outskirts of the Empire, as at Palmyra, Samaria, Damascus, Antioch and Bosra in Syria ; Pergamon in Asia Minor ; Timgad and Tebessa in North Africa ; in all of which are traces of colonnaded streets to give shelter from the sun.

RECTANGULAR TEMPLES

Roman temples are an amalgamation of Etruscan and Greek types ; for while in many respects they resembled the Greek, the typical prostyle portico and podium were derived from Etruscan temples (p. 138). There are several types, of which the most characteristic is pseudo-peripteral (p. 143 H), which, instead of side colonnades, has half-columns attached to the walls with a prostyle portico in front. The steps to the principal entrance were flanked by massive, low walls which were an extension of the lateral podium, and they

frequently supported groups of statuary (p. 143 G). Greek peripteral temples were normally twice as long as their width, but Roman temples were much shorter in proportion, while the cella itself, used as a treasure house and as a museum for Greek statuary, frequently occupied the whole width of the building. The intercolumniation was sometimes wider than in Greek temples, and then the architrave and frieze were built in voussoirs as flat arches, but this treatment was unnecessary where walls supported the entablature. Nothing definite is known as to the cella ceilings, but they may have been coffered, as in the colonnades ; of timber beams, as in the basilicas ; or vaulted, as in the Temple of Venus and Rome at Rome (p. 148 C, E), the Temple of Diana at Nîmes (p. 148 G, J, L), and the Temples at Spalato (pp. 176, 183 D). The absence of a surrounding colonnade and continuous stylobate resulted in a certain loss of unity, as compared with Greek temples, which were moreover generally isolated so as to be visible on all sides. Roman temples were intended to be seen from the forum which they faced, and the entrance was emphasised by the deep portico and steps, while there was no attempt at orientation, as in Greek temples (p. 74).

The **Temple of Fortuna Virilis, Rome** (B.C. 100) (p. 143 A, B, C) is pseudo-peripteral tetrastyle with a deep Ionic portico in the Etruscan manner, but Greek influence is evident in the refined carving of the frieze. The cella occupies the whole width between the columns. This temple was converted into the church of S. Maria Egiziaca (A.D. 880), and its portico was enclosed and windows were inserted.

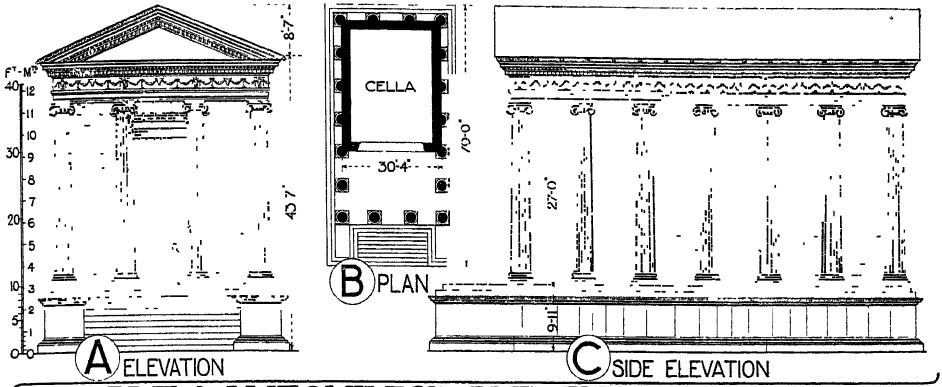
The **Temple of Mars Ultor, Rome** (B.C. 42–2) (pp. 139 B, 144), in the Forum of Augustus, was dedicated to Mars the Avenger by Augustus in fulfilment of his vow to avenge the death of Cæsar. It was one of the largest of Roman temples, with columns 58 ft. high, of which only three and a pilaster remain, with a portion of the architrave (p. 144 B, D). The cella was nearly square, and had internal columns and pilasters, and an apsidal recess—one of the earliest instances of a feature afterwards adopted in Early Christian churches. It stood in front of the Quirinal Hill in a peribolus surrounded by a wall some 100 ft. high, of peperino stone and ornamented with niches for statues (p. 144 A).

The **Temple of Concord, Rome** (pp. 139 B, 140 A), rebuilt by Augustus, (B.C. 27—A.D. 14), had an unusual plan with an extensive cella. Here too windows occur on each side of a hexastyle portico, which formed a spacious covered platform.

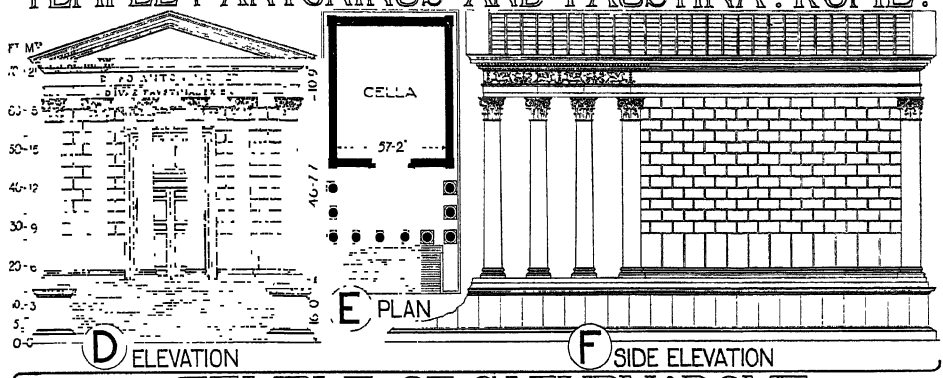
The **Temple of Castor and Pollux, Rome** (A.D. 6) (pp. 139, 147) had been dedicated in B.C. 482 to the twin gods in gratitude for their aid at the Battle of Lake Regillus in B.C. 496, and was rebuilt by Tiberius as part of his Forum. This peripteral temple, formerly known as fthat of Jupiter Stator, had an octastyle portico on a raised podium, 22 ft. high, faced with Pentelic marble and filled in solid except for a space left for a treasure chamber, which was also used for testing weights and measures. The three existing columns of Pentelic marble are 48 ft. 5 in. high and have unique Corinthian capitals in which the central volutes intertwine, and between these and the angle volutes rises a tendril from which foliage is carried along the abacus (p. 147 D). The entablature, 12 ft. 6½ ins. high, has an architrave with carved mouldings, a plain frieze, and a cornice enriched with modillions, dentils and cymatium, and lion heads throw off rain-water. The angle (p. 147 C) shows a clever arrangement of ornamental features.

The **Maison Carrée, Nîmes** (A.D. 14) (p. 144) is the best-preserved Roman temple in existence. It is raised on a podium 12 ft. high with steps only

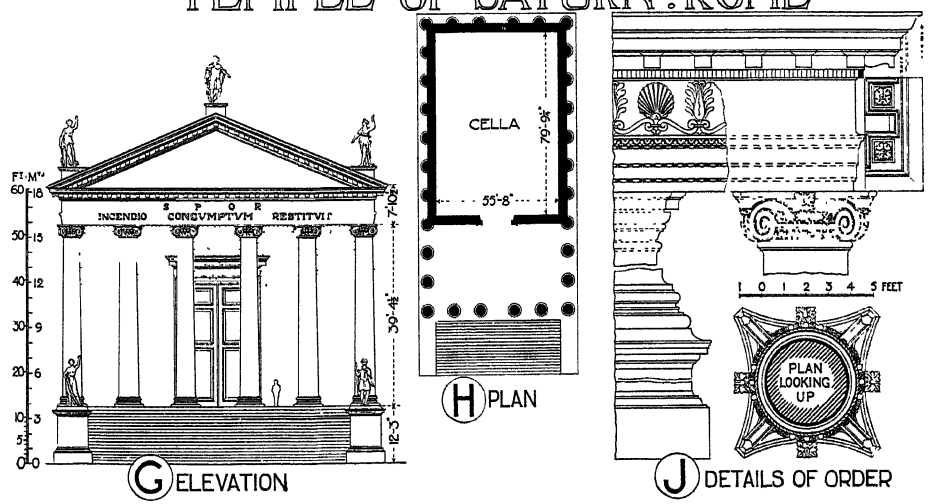
TEMPLE OF FORTUNA VIRILIS : ROME



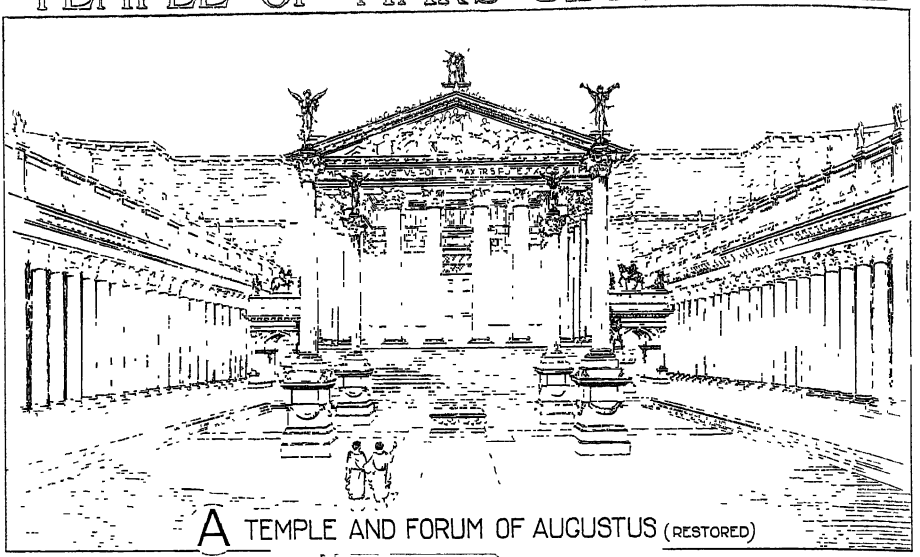
TEMPLE OF ANTONINUS AND FAUSTINA : ROME.



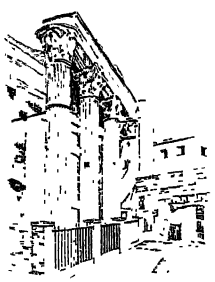
TEMPLE OF SATURN : ROME



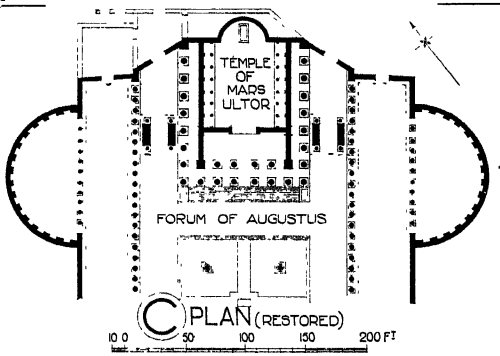
TEMPLE OF MARS ULTOR : ROME



A TEMPLE AND FORUM OF AUGUSTUS (RESTORED)



B REMAINING COLUMNS

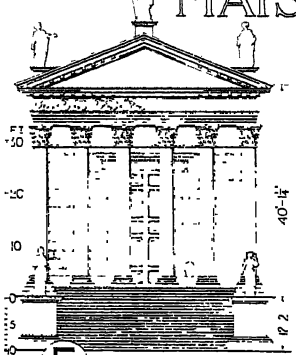


C PLAN (RESTORED)

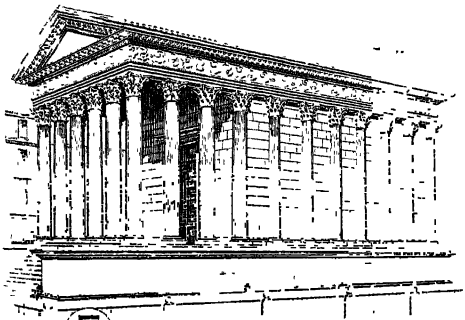


D PERISTYLE CEILING

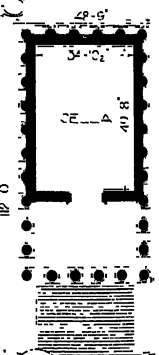
MAISON CARRÉE : NÎMES



E ELEVATION



F EXTERIOR FROM S.W.



G PLAN

on the entrance façade, and it is pseudo-peripteral prostyle hexastyle, with Corinthian columns supporting a rich entablature.

The **Temple of Diana, Nîmes** (p. 148) is probably a misnomer for a nymphæum connected with thermæ. The cella walls have internal Corinthian columns, and entablature from which springs a stone-ribbed barrel vault, the thrust of which is counteracted by continuous vaults over the side aisles. Light was probably introduced through a window at the end of the barrel vault. It is one of the four vaulted Roman temples in Europe, and, covered with stone slabs (p. 148 J), is probably a prototype of the vaulting of many southern French Romanesque churches (p. 277).

The **Temple of Vespasian, Rome** (A.D. 94) (pp. 120 T, 139 B, 140 A, 872), erected by Domitian, beside the Temple of Concord, had a prostyle hexastyle Corinthian portico, of which only three columns remain, and portion of an ornate entablature (p. 872).

The **Temple of Venus and Rome, Rome** (A.D. 123–135) (p. 148), of which little remains, was designed for Hadrian by Apollodorus of Damascus, and was raised on a platform about 540 ft. by 340 ft., which was entered through gateways in a surrounding colonnade of nearly 200 columns of Egyptian granite and porphyry, which formed a magnificent frame to this imposing temple (p. 148 B). The plan was pseudo-dipteral decastyle, and was unusual in that it had two cellas with apses placed back to back, and there was a pronaos at each front. The cella walls, faced with monolithic columns and with niches for statues, were of extra thickness to take the thrust of the semi-circular coffered vault, and the two apses for the statues of Venus and Rome had semi-domes which still exist. The plan (p. 148 A) gives the usually accepted arrangement of this building. The restoration (p. 148 B) shows the temple in its temenos surrounded by a peribolus of columns with its Pentelic columns, sculptured pediments, and a great roof, covered with gold-plated bronze tiles, which were stripped off by Pope Honorius (A.D. 625) to cover the basilican church of S. Peter.

The **Temple of Antoninus and Faustina, Rome** (A.D. 141) (pp. 139, 143 D, E, F) is prostyle hexastyle, and has a deep portico, reached by steps between the podium walls, leading into a spacious cella, 57 ft. 2 ins. wide, with plain external walling without attached columns. The pediment was destroyed and the upper part altered when it was converted into the Church of S. Lorenzo in Miranda in A.D. 1602.

The **Temple of Saturn, Rome** (A.D. 284) (pp. 139, 143 G, H, J) is a pseudo-peripteral prostyle hexastyle example of a debased type, in a commanding position close to the Capitol. The temple is raised on a podium 12 ft. 3 ins. high and steps lead to the portico of granite columns, 39 ft. 4½ ins. high, of which only eight remain with Ionic capitals having typical angle volutes, but the pediment no longer exists. The architrave mouldings were omitted along the front to admit of the inscription (p. 143 G).

The **Great Temple, Baalbek** (A.D. 131–161) (p. 151), erected in the reign of Antoninus Pius, forms part of the magnificent temple group which rears its massive form high above the plain, below the hills of Lebanon, and stands as a testimony to the power of Roman rule in Syria and to the establishment of Roman State religion wherever the legionaries planted the Imperial standards. It was raised on a high platform, approached by steps which lead to a dodecastyle Corinthian portico "in antis." Three doorways opened into a hexagonal forecourt with rectangular exedræ on either side, each fronted with four columns. Another three-fold portal led into the

main court, 380 ft. 6 ins. square, with rectangular and semicircular exedræ on three sides, all fronted with columns. The wall enclosing the main court rises 70 ft. above the plain, and the substructure of the Great Temple is formed of gigantic blocks of stone on the western side. Three of these are known as the Trilithon, and are about 64 ft. long, 11 ft. thick, and 13 ft. high, and 500 tons in weight. The Great Temple itself, also constructed of large blocks without cement, faces the main court, and stands on a podium 17 ft. above it. It was dipteral decastyle, and the unfluted Corinthian columns, of which only six remain, are about 65 ft. high and 7 ft. in diameter, carrying an entablature 13 ft. 3 in. high. The temple was much damaged by Theodosius the Great (A.D. 379–395), and later by Arabs and Turks.

The **Temple of Jupiter, Baalbek** (A.D. 273) (p. 151), which stands beside the Great Temple, is peripteral octastyle, with fifteen columns on each side, and is approached on the east by steps between wing walls. The interior has fluted Corinthian half-columns, supporting a returned entablature, with two tiers of niches between the half-columns. Some authorities think that the cella had a coffered stone vault, and there was a vaulted sanctuary approached by steps from the cella. Some coffering with medallions and busts of gods and emperors still remains in position in the peristyle ceiling.

The **Great Temple of the Sun, Palmyra** (restored A.D. 273), with its single peristyle of giant Corinthian columns, stood on a raised platform in the centre of a colonnaded court, and was approached from the town through a long street of columns, which ended in a triumphal arch.

The **Temple of Æsculapius, Spalato** (A.D. 300) is a small prostyle tetrastyle temple within the palace of Diocletian (p. 183).

CIRCULAR AND POLYGONAL TEMPLES

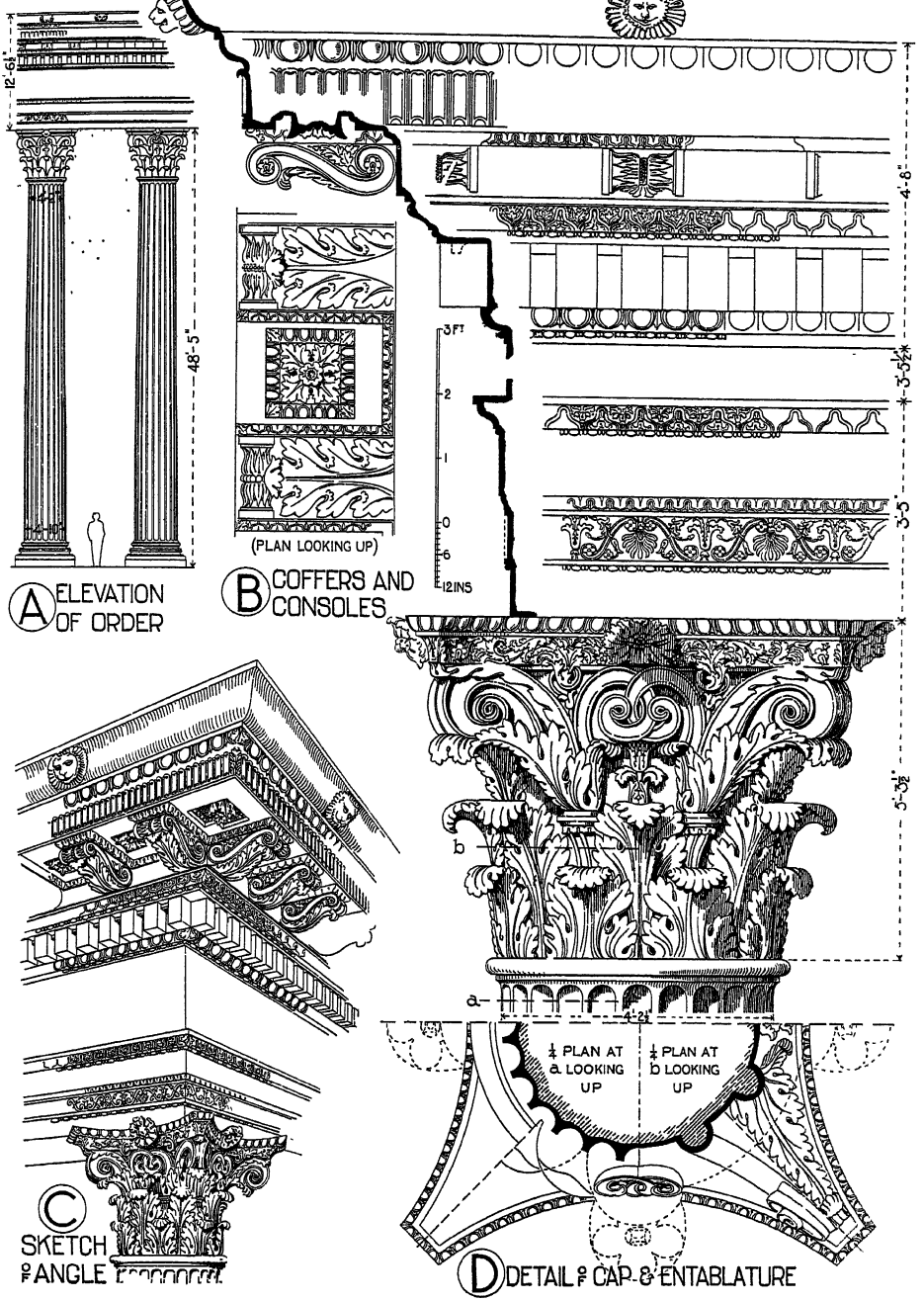
The Romans frequently employed the circular and polygonal form, which was probably derived from the temples of the Etruscans.

The **Temple of Vesta, Rome** (A.D. 205) (pp. 139 B, 152), in the Forum Romanum, was the most sacred shrine in the Imperial city, and here under the custody of the Vestal Virgins the sacred fire was kept alight which signified the home hearth as the centre and source of Roman life and power (p. 132). It was founded in B.C. 715, but was frequently destroyed by fire and repeatedly rebuilt, finally by Septimius Severus in A.D. 205 (p. 152 C). According to recent excavations, it seems to have had a podium 10 ft. high supporting a circular cella, 30 ft. in diameter, surrounded by eighteen Corinthian columns, 17 ft. 6 in. high, and fragments of columns have been found with fillets for the insertion of metal screens.

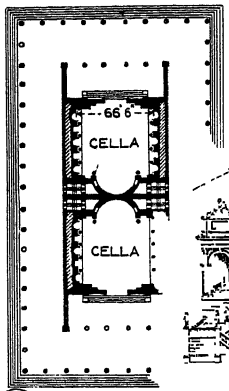
The **Temple of Vesta, Tivoli** (p. 152), dating from the time of Augustus (B.C. 27–A.D. 14), is circular peripteral with a podium supporting a cella, 24 ft. in diameter, surrounded by a peristyle of eighteen Corinthian columns, 23 ft. 6 ins. high. The cella has two windows and a doorway approached by steps. The columns are nearly $9\frac{3}{4}$ diameters high, and the capitals, with large and unusual central flower and foliage derived from a crinkly variety of the "acanthus mollis," are one diameter in height. The difference in treatment between the Temple of Mater Matuta, Rome, and this temple at Tivoli, is accounted for by the difference in their position. The Roman temple on a low, flat site near the Tiber has slender columns to give it an appearance of height; whereas the Tivoli temple, perched on the edge of a rocky prominence and thus provided with a lofty natural base, has sturdier columns.

The **Temple of Mater Matuta, Rome** (p. 136 A), formerly erroneously

TEMPLE OF CASTOR & POLLUX : ROME



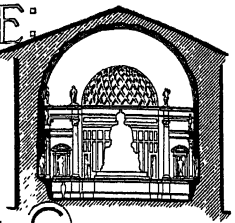
TEMPLE OF VENUS & ROME: ROME (RESTORED)



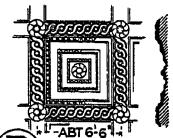
A PLAN WITHOUT PERIBOLUS



B TEMPLE WITH PERIBOLUS (RESTORED)

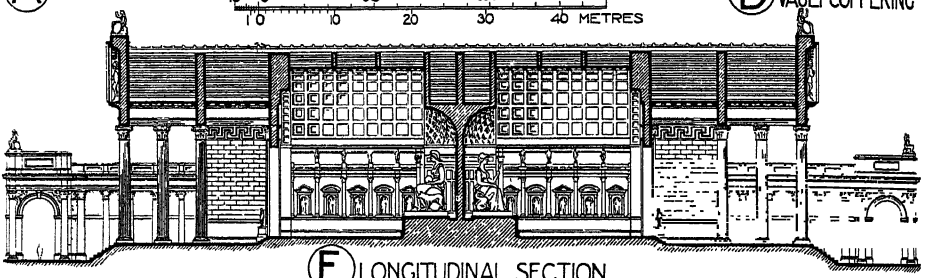


C TRANSVERSE SECTN. OF CELLA



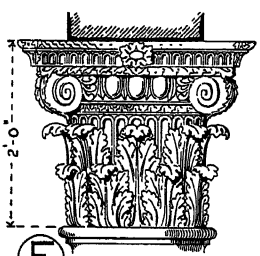
D VAULT COFFERING

SCALE FOR SECTIONS
10 0 50 100 150 FEET
10 0 10 20 30 40 METRES



E LONGITUDINAL SECTION

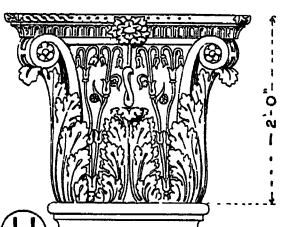
TEMPLE OF DIANA: NÎMES



F COLUMN CAPITAL



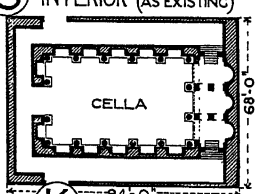
G INTERIOR (AS EXISTING)



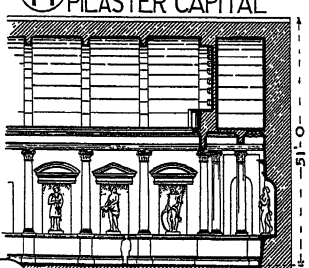
H PILASTER CAPITAL



J TRANSVERSE SECTION



K PLAN



L LONGITUDINAL SECTION

known as the Temple of Vesta, now S.M. del Sole, also dates from the time of Augustus. It is situated in the Forum Boarium on a circular stylobate of marble steps. It is of Parian marble and is circular peripteral with twenty Corinthian columns, 34 ft. 7 ins. high and 3 ft. 2 ins. in diameter and therefore nearly eleven-diameters high, which surround a cella 28 ft. in diameter. The capitals have acanthus leaves V-shaped in section and with sharp-pointed lobes which generally indicate Greek craftsmanship. The roof was probably of timber rafters covered with bronze tiles.

The **Pantheon, Rome** (pp. 153, 154, 193 A, F), is in the most perfect preservation of all ancient buildings in Rome; much has been removed, much has been restored, but the walls and vaulting of this great circular structure with its magnificent colonnaded portico still remain. The Pantheon was so called, according to Dion Cassius (born A.D. 155), either because it was dedicated to the deities of the Gens Julia or because its dome resembled the curved canopy of heaven. The investigations of M. Chedanne in A.D. 1892 prove that it belongs to two distinct periods. A nymphæum for plants and running water, the floor of which was 8 ft. below the present level, once occupied the site on which the Rotunda now stands. This nymphæum was to the south of a decastyle portico leading into a three-cell temple of the Etruscan type, built, as recorded on the frieze, by Agrippa during the reign of Augustus (B.C. 27—A.D. 14), but it has entirely disappeared, leaving the present piazza. The Rotunda was erected (A.D. 120–124) by the Emperor Hadrian on the site of the more ancient nymphæum. The portico of Agrippa's temple was next taken down and re-erected at a higher level, facing north instead of south, while it was also made octastyle instead of decastyle, and the inscription on the architrave records the names of Severus and Caracalla (A.D. 202) as the authors of the adaptation by which the portico of Agrippa's Temple was transformed into the frontispiece of Hadrian's Rotunda. The Corinthian octastyle portico, 110 ft. wide by 60 ft. deep in the centre, forms an imposing entrance to this grandest of all circular temples. The unfluted monolithic columns of marble and granite, with Corinthian capitals of white Pentelic marble, are 46 ft. 5 ins. high, 4 ft. 11½ ins. in diameter at the base, and 4 ft. 3½ ins. at the top (p. 153 C, D, E). They support an entablature 11 ft. high, and a pediment which originally had a bronze relief, as is indicated by the holes for fixing it which still remain (p. 153 A). The eight front columns with the others form a triple colonnade, as in Etruscan temples (p. 153 B). At the back of this portico are niches in which stood colossal statues of Augustus and Agrippa on either side of the old Roman bronze doors which, with the fanlight, were originally plated with gold (p. 115 A). These bronze doors still remain, but the bronze plates of the original segmental vaulting were removed in A.D. 1626 and recast for the Baldachino in S. Peter's (p. 587) and for the cannon of the Castle of S. Angelo.

The Rotunda is circular with an internal diameter and height each of 142 ft. 6 ins. A travertine podium supports the circular concrete wall 20 ft. thick, faced externally with brick banded with a layer of tiles every three feet. It is lined internally with marble and porphyry, and there are eight great recesses, one of which forms the entrance, while the others probably contained statues of the gods of the Gens Julia. Three of the remaining seven recesses are semicircular exedræ—the other four are rectangular, and stairs on either side of the entrance lead to the upper parts of the building (p. 153 B). Two columns are placed on the front line of each of these recesses, above which are hidden relieving arches. The eight piers

have three tiers of niches on the exterior of the building, of which the lower are semicircular on plan, and are 19 ft. high to the springing of their semi-domes; the floor of the second tier is on the same level as the cornice over the inner Order of columns and the third tier is level with, and entered from, the second cornice of the exterior. The monolithic marble columns, 34 ft. 10 ins. high, in front of the internal recesses, believed to be part of the original design, have their lower third cabled and the upper portion fluted, and they support an entablature (pp. 153 A, 154 B). The marble facing to the walls between, as well as the columns, entablature, and pediments of the projecting altars, are later additions. The attic, or upper part of the circular wall, was originally faced with marble pilasters (six of the capitals of which are in the British Museum) and panelling of giallo antico, serpentine, and pavonazetto, but in A.D. 1747 this was replaced by stucco decoration.

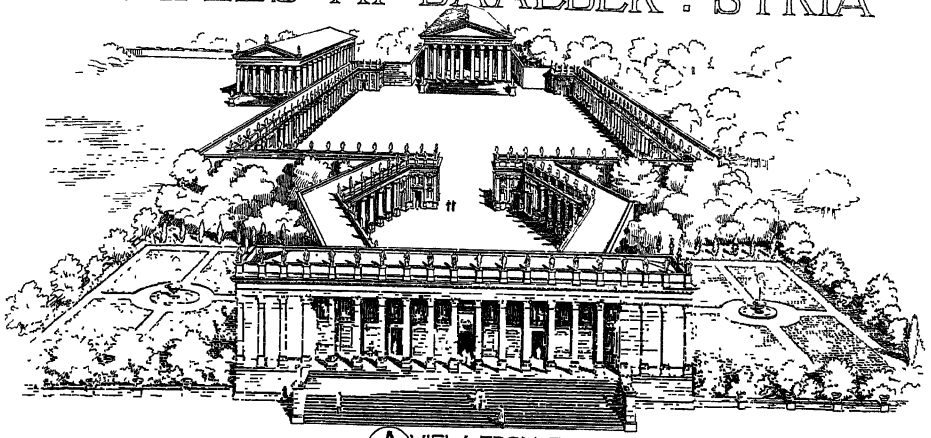
The dome is a hemisphere, the inner surface of which is coffered in five ranges, in each of which the mouldings are adjusted or foreshortened with regard to their appearance from below and were originally embellished with central bronze ornaments. The coffers not only ornament the surface of the dome, but serve also to reduce its weight. The dome was found by Chedanne to be not of concrete, but of brickwork and thick mortar, laid in almost horizontal courses up to the fourth range of coffers, and also near the central opening at the summit. The intermediate portion was not examined, but the theory is that a series of arches may have been formed in this portion to take the thrust of the dome off the recessed openings below. The lighting is effected solely by one circular unglazed opening 27 ft. in diameter in the crown of the dome, and it still retains its circular bronze cornice (pp. 153 A, 154 B). This method of lighting produces the most solemn and impressive effect, and this great eye may have had a symbolic meaning, the idea being that worship in this temple of all the gods should take place in a building open to the vault of heaven. It is a matter of no small surprise that from this one single source ample light should be thrown round all parts of the building, even when the great bronze doors are not open to admit the Italian sunlight.

In the time of Hadrian the lower storey of the Pantheon was faced externally with large slabs of gleaming white Pentelic marble and its two upper storeys were coated with stucco. The dome, the lower portion of which is formed in steps, was covered with gilded bronze plates, till they were removed to Constantinople in A.D. 655 and replaced by lead. The octastyle portico contained in its pediment a magnificent bronze relief representing a "gigantomachia" or battle of the Titans and various deities, while the massive attic behind supported imposing groups of bronze statuary as restored in the Metropolitan Museum of Art, New York (p. 154 A).

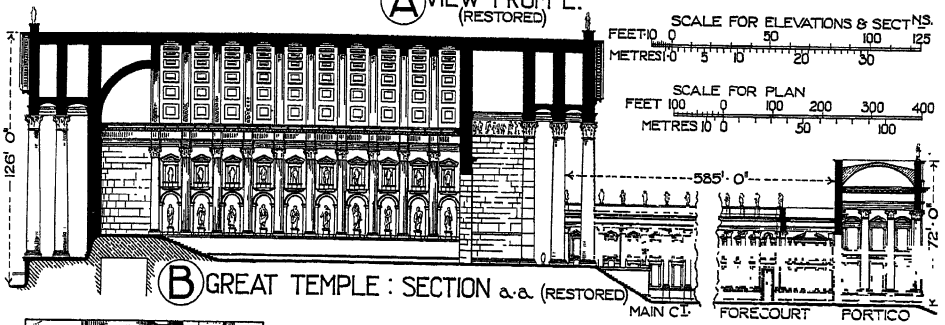
The Pantheon has survived centuries of change, both temporal and spiritual, and is still devoted to the service of religion, but it is the religion of the one God of Christianity instead of the pantheon of heathen deities. In A.D. 608 it was dedicated by Pope Boniface IV to S. Maria ad Martyres, when many loads of martyrs' bones were brought here from the Catacombs. It is now known as S. Maria Rotunda and is shorn of statuary, marble sheathing, iridescent bronze, and glittering gold which rendered it magnificent in the days of Imperial Rome, but it still compels world-wide admiration by reason of the severe simplicity and unity of the design.

The **Temple of Jupiter, Spalato** (A.D. 284) (p. 183), standing in Diocletian's palace, is sometimes known as his Mausoleum. It is raised on a podium

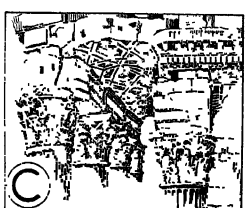
TEMPLES AT BAALBEK : SYRIA



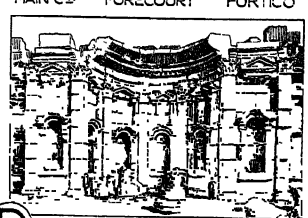
A VIEW FROM E. (RESTORED)



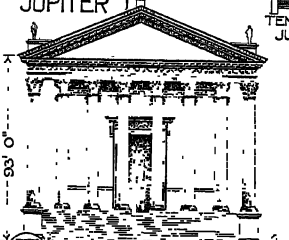
B GREAT TEMPLE : SECTION a-a (RESTORED)



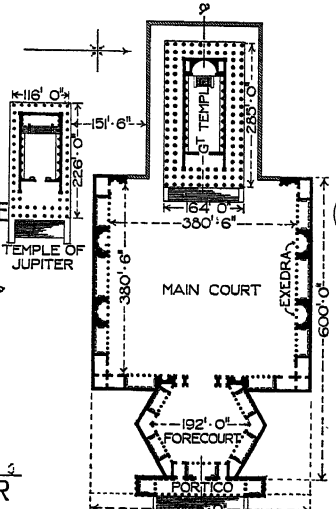
C TEMPLE OF JUPITER COLONNADE



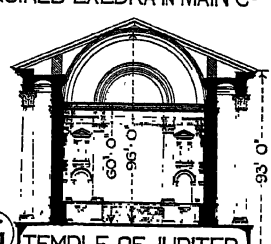
D RUINED EXEDRA IN MAIN Ct



E TEMPLE OF JUPITER PORTICO (RESTORED)

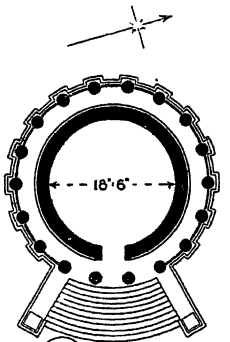


F PLAN

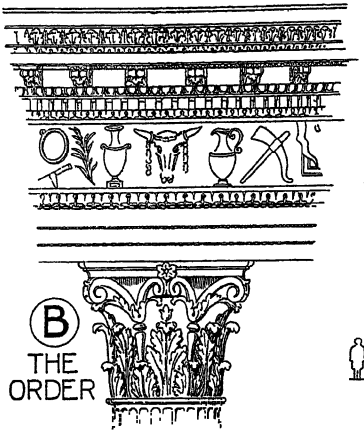


G TEMPLE OF JUPITER TRANSVERSE SECTION

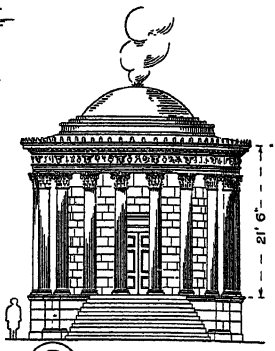
TEMPLE OF VESTA: ROME (RESTORED)



A PLAN

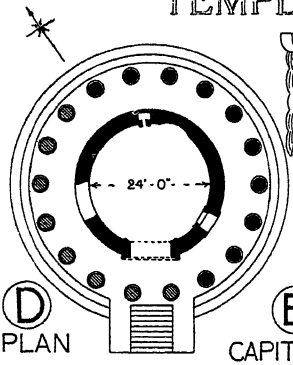


B THE ORDER

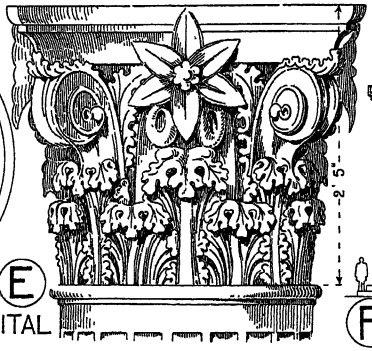


C ELEVATION

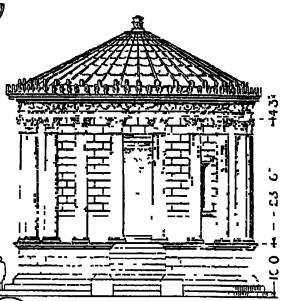
TEMPLE OF VESTA: TIVOLI.



D PLAN

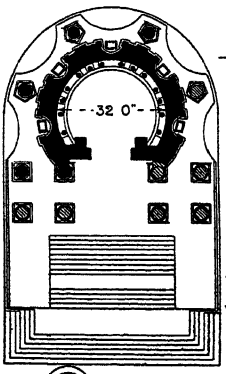


E CAPITAL

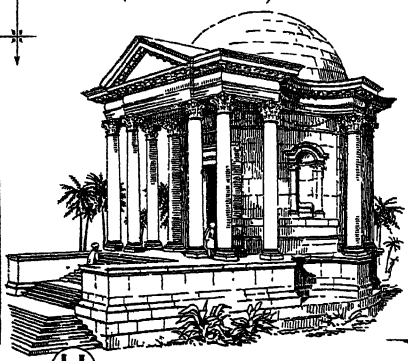


F ELEVATION (RESTORED)

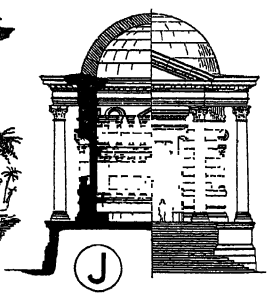
TEMPLE OF VENUS: BAALBEK (RESTORED)



G PLAN

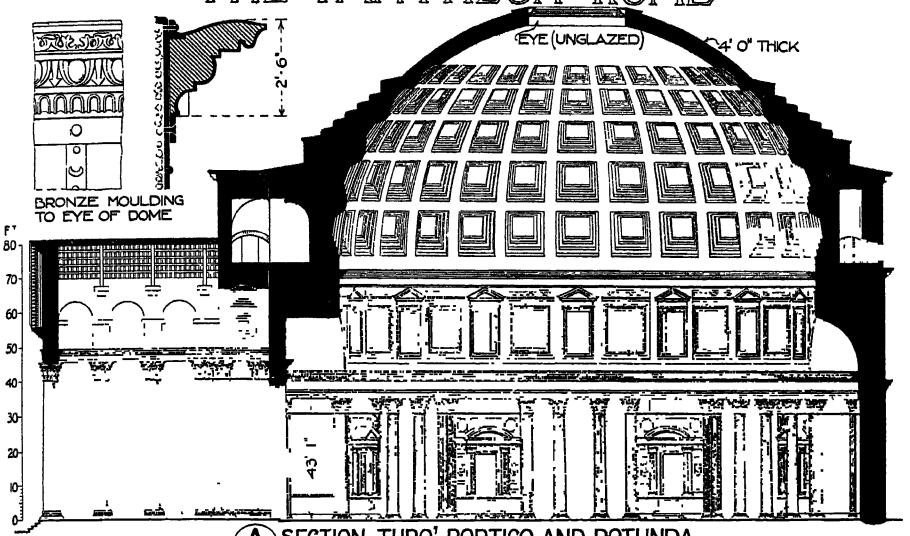


H EXTERIOR FROM N.W.

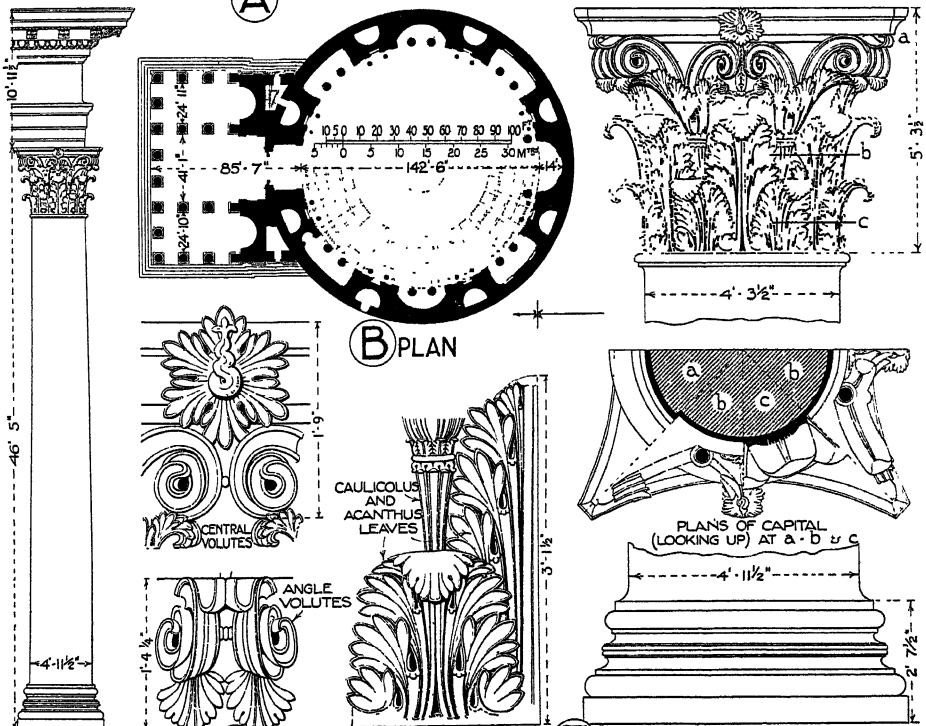


J ½ SECTION ½ ELEVATN

THE PANTHEON : ROME

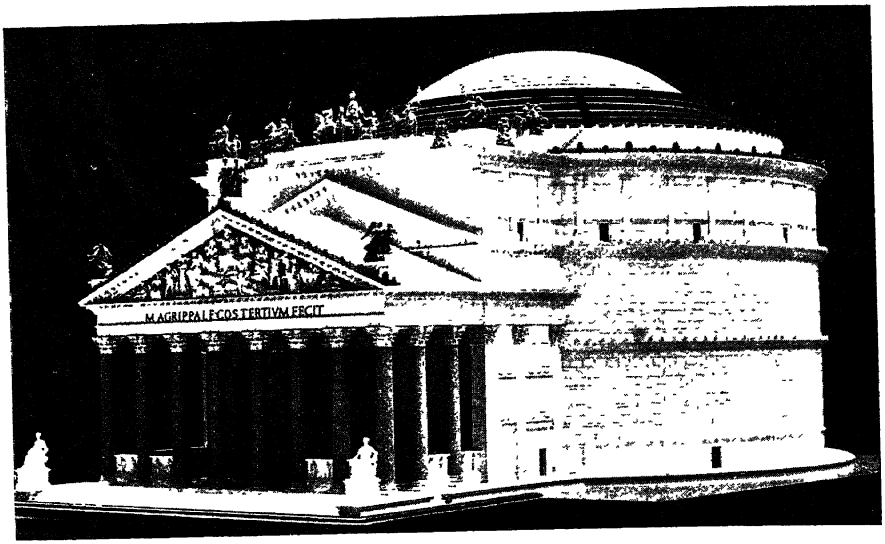


A SECTION THRO' PORTICO AND ROTUNDA

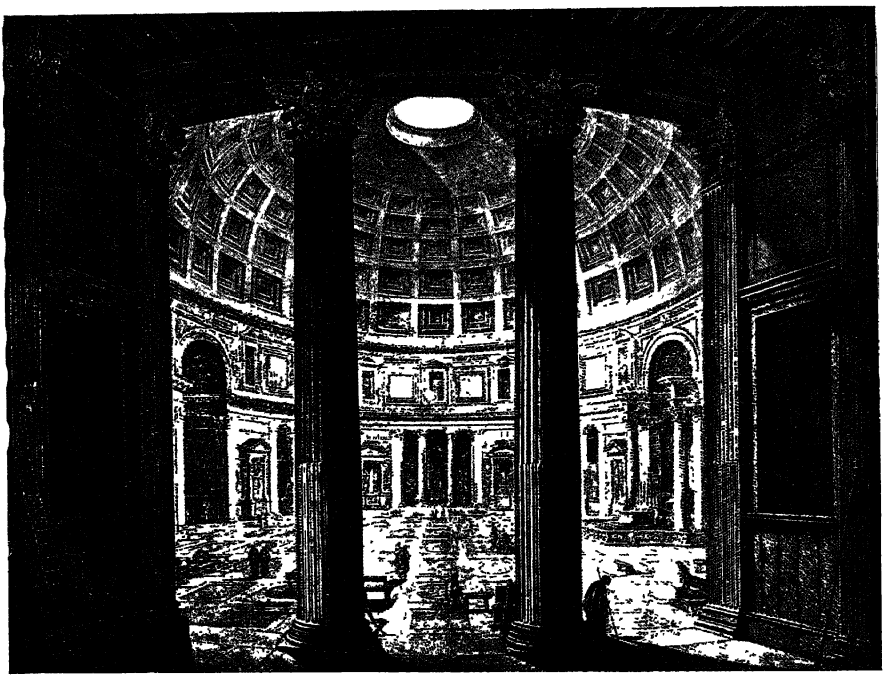


B PLAN

C PORTICO ORDER D DETAILS OF CAPITAL E DETAILS OF PORTICO COLUMNS



A. The Pantheon, Rome (restored)



B. The Pantheon, Rome

and is octagonal externally, surrounded by a low peristyle of Corinthian columns. The cella is circular, 43 ft. 8 ins. in diameter, with four semicircular and three rectangular recesses, and the entrance corresponds to a fourth. Between these recesses are eight Corinthian columns with entablature, surmounted by Composite columns and entablature, all advanced slightly in front of the wall of the cella, which is crowned with a remarkable domical vault in tiers of brick arches and externally is pyramidal in form.

The **Temple of Venus, Baalbek** (A.D. 273) (p. 152), has a cella, 32 ft. in diameter, raised on a podium and approached by steps. It is surrounded by Corinthian columns 33 ft. 8 ins. high, six of which are well advanced from the cella wall and occupy positions resulting from the division of the circle into seven equal parts (p. 152 G). The line of the entablature supported by these six columns is curved inwards between the columns towards the cella wall. The entrance is placed centrally between two divisions of the circle, and has a column on either side. The external wall of the cella has Corinthian pilasters behind the columns, with semicircular niches for statuary between them ; while internally it has superimposed Ionic and Corinthian Orders.

Christian baptisteries were evolved from these little circular temples, which therefore hold an extremely interesting position in architectural evolution (p. 207).

BASILICAS

Basilicas, which were halls of justice and commercial exchanges, indicate clearly, by their central position, the importance of law and business in Old Rome. These buildings, which are of a pronounced type, are a link between Classic and Christian architecture (p. 202). The usual plan of a basilica, which was probably a Roman development from a Greek temple, was a rectangle twice as long as its width. Either two or four rows of columns, forming three or five aisles, ran the entire length, and above were galleries with upper columns which supported the roof. The entrance was either at the side or at one end. The tribunal at the other end was on a raised daïs, generally in a semicircular apse, and sometimes separated from the main building by a screen of columns or by a low balustrade. Ranged round the apse were seats for the assessors with a raised seat in the centre for the prætor, and in front was the altar where sacrifice was offered before transacting business. The building, which was generally covered with a wooden roof, was, according to Vitruvius, sometimes open along the sides, and presented a simple and unadorned exterior in comparison with the interior.

Trajan's Basilica, Rome (A.D. 98) (pp. 139 B, 157), by Apollodorus of Damascus, was entered through a noble portico from Trajan's Forum. Adjoining the Basilica were the Greek and Latin libraries with Trajan's famous Column in an open court between them (p. 157 B). It had a central nave (p. 157 A), 385 ft. long and 87 ft. wide, with double aisles, each 23 ft. 9 ins. wide, and the total internal height was about 120 ft. The columns separating nave and aisles were of red granite from Syene, with white marble Corinthian capitals, and they supported galleries over the side aisles, above which came the clear-story and simple timber roof usual in these basilicas. At each end were raised tribunals with semicircular apses and sacrificial altars in front.

The **Basilica of Constantine, Rome** (A.D. 312) (pp. 139 B, 157), also known as the Basilica of Maxentius and formerly as the Temple of Peace, adjoins

the Forum Romanum. It consists of a central nave, 265 ft. long by 83 ft. wide, and was crowned at a height of 120 ft. by an immense groined vault in three compartments. North and south are aisles also in three compartments, each roofed with a great semicircular vault, 76 ft. in span, springing from walls which are at right angles to the nave and pierced by openings, and these walls, steadied by the pressure of the aisle vaults, supported the nave vault. Monolithic columns stood in front of these transverse walls and supported entablatures from which sprang the nave cross-vaults (p. 157 F). There were two apses, north and west of the nave. Light was introduced in the upper part of the nave over the aisle vaults by lunettes in the wall formed under the intersecting vaulting. The building is similar to the tepidarium of the thermæ (p. 159) and is in many respects a prototype of a Gothic structure, in which the thrust and weight of intersecting vaults are collected and brought down on to piers built to receive them. The vaults to the northern aisle remain with their deep brick coffering, and a portion of the main concrete vault of pozzolana still overhangs in mid-air, although the column which supported it has disappeared, thus showing the extraordinary cohesive quality of concrete.

Other basilicas at Rome were the Basilica Porcia (B.C. 184), believed to be the oldest; the Basilica Julia (B.C. 46) (p. 139); and the Basilica Æmilia (p. 139). There are also remains of basilicas at Pompeii, Fano, Trèves, Timgad, and at Silchester in England, and indeed there can be no doubt that wherever Rome established her power a basilica for the administration of justice formed an important feature in her town-planning.

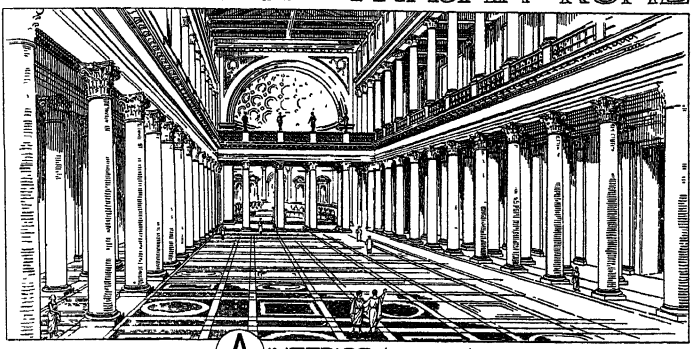
THERMÆ

The Thermæ (Gk. *thermos* = hot) or palatial public baths of Imperial Rome, which were probably derived from the Greek Gymnasia, portray, even in their ruin, the manners and customs of the pleasure-loving populace, and are as characteristic of Roman civilisation as are the amphitheatres. The principal ruins of thermæ in Italy are at Rome and Pompeii, and much can be learned of their former magnificence from the drawings of Palladio, made in the sixteenth century, when they were in a better state of preservation than now, while students of the École des Beaux-Arts have also worked out some imaginative restorations. The thermæ were not only designed for luxurious bathing, but were resorted to for news and gossip, and served, like a modern club, as a rendezvous of social life besides being used for lectures and athletic sports, and indeed entered largely into the daily life of the Imperial City. A small entrance charge of a quadrans (¼ farthing) was sometimes made, but in later times they were opened free to the populace by emperors in search of popularity. The thermæ were under the management of the "ædiles"; there were also "balneatores" to take the entrance money, and janitors to guard the doors, with a staff of attendants, including anointers, manicurists, barbers, shampooers, besides stokers, lamplighters, and hundreds of slaves to make the process of bathing a luxurious relaxation.

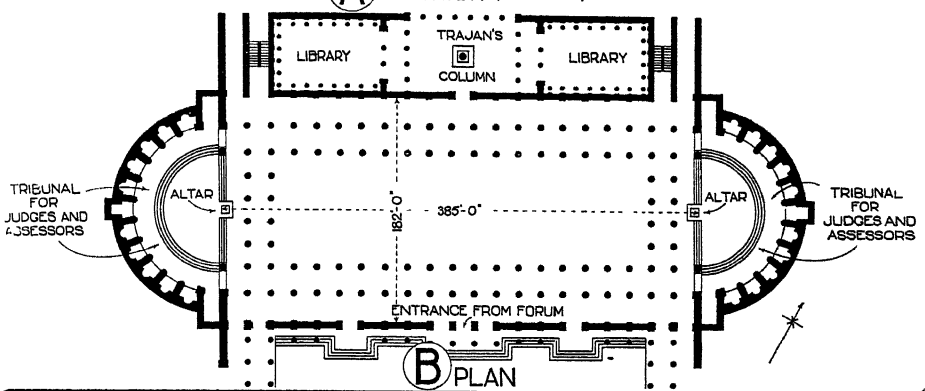
The thermæ were generally raised on a high platform within an enclosing wall, and underneath were the furnaces and rooms connected with the service of the establishment, which usually consisted of three main parts, as shown in the Thermæ of Caracalla (p. 158 B) and Diocletian (p. 161 D):

(*a*) A great central structure. This contained the "tepidarium," or

BASILICA OF TRAJAN: ROME

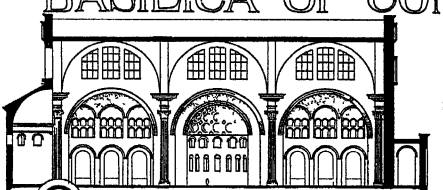


A INTERIOR (RESTORED)



B PLAN

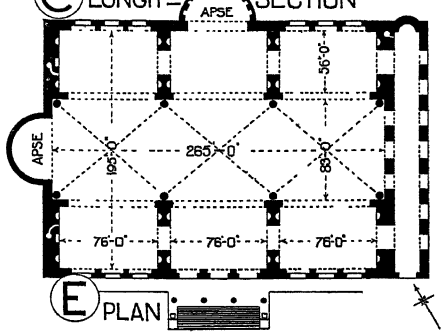
BASILICA OF CONSTANTINE: ROME



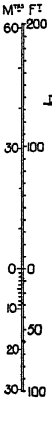
C LONGITUDL SECTION



D TRANSVERSE SECTION



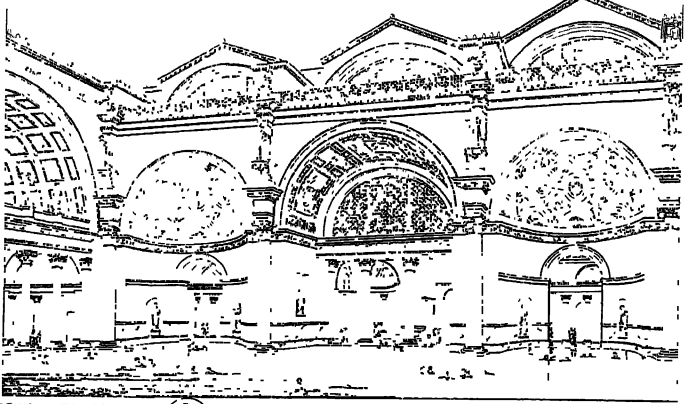
E PLAN





F INTERIOR (RESTORED)

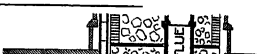
THERMÆ OF CARACALLA : ROME



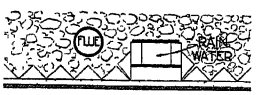


PLAN OF CALIDARIUM WALLS & FLUES

Ⓐ THE FRIGIDARIUM (RESTORED)



SECTION THRO HYPOCAUSTS



PLAN OF TEPIDARIUM WALLS & FLUES

1 ANTE ROOMS
2 APODYTERIA & STAIRCASES
3 ENTRANCE HALLS
4 OPEN PERISTYLES
5 HOT BATHS
6 ANTE ROOM

7 WARM BATHS
8 ENTRANCES
9 MAIN ENTRANCE
10 PORTICUS AND SMALL CHAMBERS
11 LECTURE HALLS & LIBRARIES
12 EPHEBEUM

Ⓑ PLAN

100 50 0 100 200 300 400 500 600 700 FEET
10 0 50 100 150 200 METRES

warm lounge ; the " calidarium," or hot room, with a hot-water bath ; the " sudatorium " (" laconium "), or hottest room, and the " frigidarium," or cooling-room, with its " piscina," or swimming-bath, all of which were devoted to bathing somewhat on the system of the modern Turkish bath. There were also " apodyteria," or dressing-rooms, and " unctoria," for oils and unguents, where the " aliptor " shampooed, oiled, sanded, and anointed the bathers and scraped the skin with the " strigillus." A " sphæristerium " for games of ball, a library, and small theatre were occasionally included in the central structure.

(*b*) A large open space. This was a park-like enclosure surrounding the central structure, planted with trees and ornamented with statues and fountains. Part of it was used as a stadium with raised seats at the side for spectators ; and here various athletic sports took place, such as wrestling, racing, jumping, and boxing.

(*c*) An outer ring of apartments. These included lecture rooms and exedræ for philosophers, poets, and statesmen ; while colonnades, a feature of all open spaces in Rome, served as a protection from the sun. A large reservoir fed by a special aqueduct supplied the frigidarium, tepidarium, and calidarium. Other apartments were let off as shops or accommodated the numerous slaves of the establishment.

The **Thermæ of Caracalla, Rome** (A.D. 212–235) (pp. 135 K, L, 158, 174[1]), with accommodation for 1,600 bathers, give a splendid idea of the size and magnificence of these establishments ; for although now in ruins, the relative positions of tepidarium, calidarium, frigidarium, sphæristeria, apodyteria, and other apartments can still be traced. The Thermæ stood on a platform 20 ft. high, measuring over one-fifth of a mile each way, and underneath were the vaulted store-chambers, corridors, furnaces, hypocausts and hot-air ducts for heating the buildings (p. 158). A colonnade on the entrance side screened two storeys forming shops on the ground level and " slipper " baths on the platform level. The main entrance led to the park-like enclosure, laid out for wrestling and games, around which were grouped halls for dramatic representations and lectures. On the opposite side of the platform and beyond the stadium was the great vaulted reservoir of water supplied by the Marcian Aqueduct, heated by furnaces and carried through leaden pipes to the thermæ proper. The central building, used entirely for bathing, measured 750 ft. by 380 ft., thus covering an area of 285,000 sq. ft., i.e., about equal to Westminster Palace, and larger than either the British Museum or the Royal Courts of Justice, London. There were only four doorways on the north-east side, which was exposed to cold winds ; but large columned openings to the gardens were a feature of the south-west side. The symmetrical planning of this building on axial lines gave vistas through the various halls and saloons, while exedræ and screens of columns prevented any loss of scale and emphasised the vastness of the building.

The tepidarium was the controlling feature of the plan and around it the subsidiary halls were grouped (pp. 158 B, 174[1] D). It was 183 ft. by 79 ft., roofed with an immense semicircular, intersecting vault of concrete, in three compartments 108 ft. high, which rested on eight massive piers of masonry, fronted with granite columns 38 ft. high and 5 ft. 4 ins. in diameter, supporting short pieces of entablature (p. 135 L). This great apartment was lighted by clear-story windows in the walls under the intersecting vaults, which rose above the roofs of adjoining halls, as in the Thermæ of Diocletian (p. 161 A) and the Basilica of Constantine (p. 157 C, D, F). The calidarium on

the south side was reached through an ante-room and may have had a dome similar to that of the Pantheon, while special attention was given to heating this apartment by wall flues (p. 158). The frigidarium was probably centrally open to the sky, and this open-air swimming-bath formed a welcome retreat during the hot and sultry months in the Imperial City (pp. 158 A, 174[1] C). Many metal joists found below the ground suggest that it may have been partly roofed in and probably cased with bronze. The interior, unlike the exterior, was evidently elaborately decorated, in marked contrast to Greek methods. Pavements were formed of bright-coloured mosaics in geometrical patterns or with figures of athletes; the lower parts of the concrete walls were sheathed with many-coloured marbles, and the upper parts with painted and modelled stucco; the great columns under the vault springers were of granite, porphyry, giallo antico, alabaster or other rare marbles from the Ægean Islands. Various coloured marble columns were used constructively to support the upper balconies and peristyle roofs, and decoratively to form, with their entablatures and pediments, frames for the superimposed niches in the walls. The great vaults were also richly ornamented with coffering, bold figure decorations in black and white, or coloured-glass mosaic.

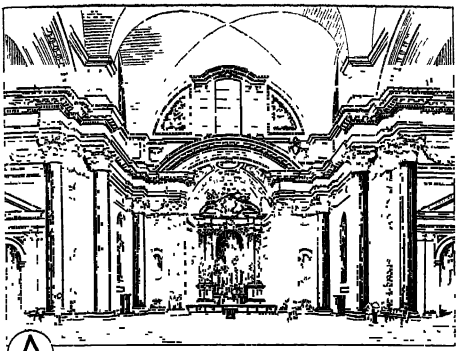
These magnificent halls sheltered some of the finest sculpture of antiquity, which was brought from Greece or executed by Greek artists in Rome. During the excavation of the thermæ in the Renaissance period many of these masterpieces of art were removed to the Vatican and other museums in Rome, whence later some were carried off to the museums of Europe. Additional interest was given to interiors by the perpetual streams of running water which, issuing from the mouths of lions sculptured in marble or wrought in brightly polished silver, fell into marble basins and produced a delicious coolness in hot, sultry weather. The exteriors of these great thermæ appear to have been treated very plainly in stucco, or left as impressive masses of plain brickwork, perhaps banded with bricks of a contrasting colour.

The **Thermæ of Agrippa, Rome** (B.C. 27), which were the earliest, have disappeared, but the drawings of Palladio give an idea of their plan and general appearance.

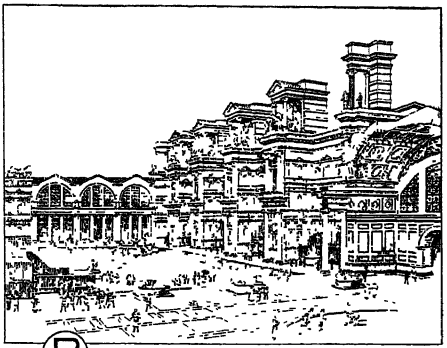
The **Thermæ of Titus, Rome** (A.D. 80), stood on a great platform, partly over the foundations of Nero's Golden House on the Esquiline Hill, and when excavated about A.D. 1500 many remarkable frescoes (p. 194 B) were discovered, which had considerable influence on the painting of that period, and some of the finest statues of antiquity, such as the Laocoon group, found their way into the art galleries of Europe.

The **Thermæ of Diocletian, Rome** (A.D. 302) (p. 161), which accommodated over 3,000 bathers, resembled the Baths of Caracalla in their general distribution (p. 161 D). The tepidarium, 200 ft. long by 80 ft. wide and 90 ft. high, is covered with the original cross vaulting of concrete (p. 135 M), springing from eight monolithic columns of Egyptian granite, 50 ft. high and 5 ft. in diameter, with Composite capitals of white marble, supporting an ornamental entablature (p. 161 A). This tepidarium is of special interest, first because it gives the general appearance of these great halls, and secondly because it was converted by Michelangelo, in A.D. 1563 into the Church of S.M. degli Angeli. A choir was added on one side by Vanvitelli (A.D. 1749), which converted the nave into a transept. The restorations of the frigidarium (p. 161 B) and the ephebeum (p. 161 H) give a good idea of the sumptuous character of the building.

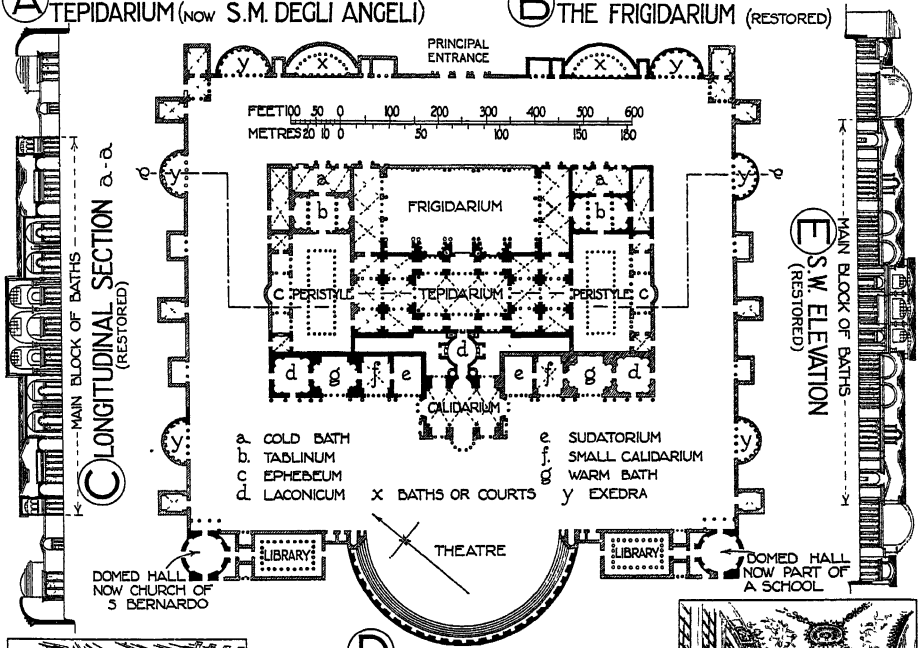
THERMÆ OF DIOCLETIAN : ROME



A TEPIDARIUM (NOW S.M. DEGLI ANGELI)



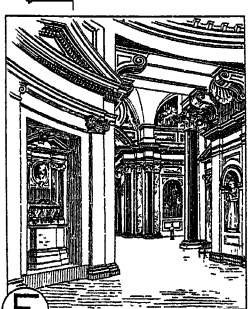
B THE FRIGIDARIUM (RESTORED)



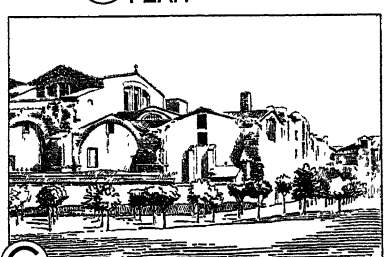
C LONGITUDINAL SECTION a-a. (RESTORED)

E S.W. ELEVATION (RESTORED)

D PLAN



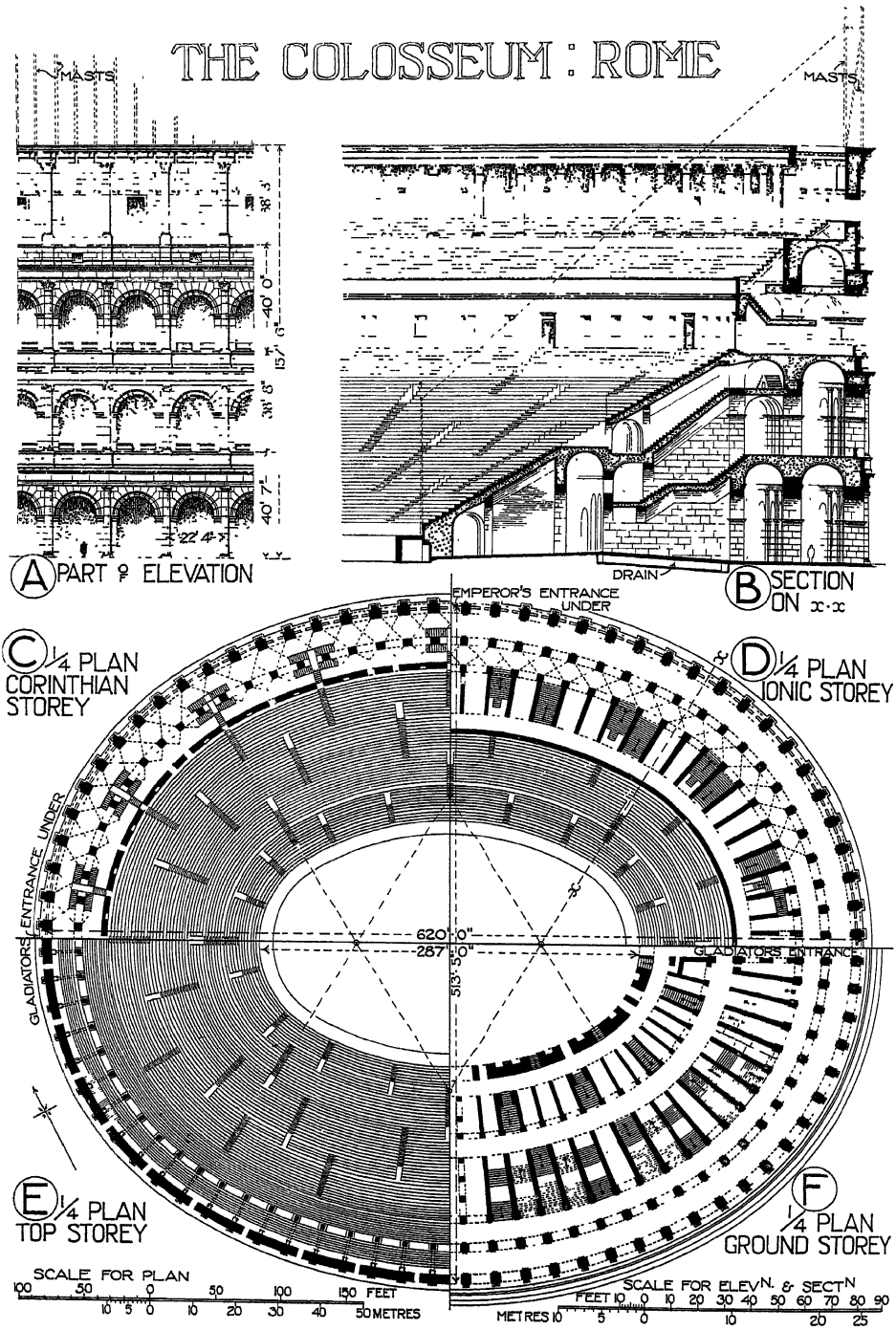
F VESTIBULE OF S.M.D. ANGELI



G EXTERIOR FROM S. (AS EXISTING)



H EPHEBEUM (RESTORED)


THE COLOSSEUM : ROME
MASTS
MASTS
38' 3"
40' 0"
15' 6"
38' 6"
40' 7½"
22' 4"
A PART OF ELEVATION
DRAIN
B SECTION ON x·x
EMPEROR'S ENTRANCE UNDER
C ¼ PLAN CORINTHIAN STOREY
D ¼ PLAN IONIC STOREY
GLADIATORS' ENTRANCE UNDER
620' 0"
287' 5"
513' 5"
GLADIATORS' ENTRANCE
E ¼ PLAN TOP STOREY
F ¼ PLAN GROUND STOREY
SCALE FOR PLAN
100 50 0 50 100 150 FEET
10 5 0 10 20 30 40 50 METRES
SCALE FOR ELEVN. & SECTN
FEET 10 0 10 20 30 40 50 60 70 80 90
METRES 10 5 0 10 20 25

The unbounded licence of the public baths, which were resorted to for all sorts of dissipation, brought them under the ban of the Early Christians, who held that bathing might be practised for cleanliness, but not for pleasure. Then in the fifth century the thermæ fell further into disuse and decay, owing to the destruction of aqueducts by the Huns, and also to the decrease of the population. Later they served as quarries for Mediæval and Renaissance builders.

The **Balneum** or small private bath was very usual in Roman palaces (p. 183 D) and houses, and under the Republic gave its name to public baths, which were simpler in character than the later thermæ of the Empire, in which bathing became secondary to luxury and entertainment. The Older Thermæ, Pompeii, and the Stabian Thermæ, Pompeii, are on the lines of these small public baths.

Wherever the Romans settled they built thermæ for the people, and thus at that notable Roman city of Timgad, North Africa, there are the ruins of no less than eleven of these sumptuous thermal establishments. At Bath in England, the "Aquæ Solis" of the Romans, the most remarkable thermæ in existence have been unearthed, where the hot water still gushes up and flows through the massive leaden conduit into the great swimming-bath. The Romans also used slipper baths, many of which were beautifully carved (p. 197 E, G).

The **Minerva Medica, Rome** (p. 231 A, B), is now generally regarded as a nymphæum of the Baths of Gallienus (A.D. 266); for the absence of a hypocaust and of flue tiles precludes it from having been used as a calidarium. It is decagonal on plan, 80 ft. in diameter, with semicircular niches on nine sides and the entrance on the tenth. Just below the dome there were ten large windows which would give light and air to the growing plants. The dome, which bears a remarkable similarity to that of S. Vitale, Ravenna (p. 230), is of concrete, ribbed with tiles. It is particularly interesting because here roughly formed "pendentives" were first employed to set a circular dome on a decagonal base (p. 135 N), a device further developed by the Byzantines. Here too buttresses, at given points, admitted of thinner walls, and thus was foreshadowed a more complicated system than that of the uniform wall which supported the dome of the Pantheon. This was indeed a step towards the elaborate structural system, dependent upon elasticity and equilibrium, which wrought such a miraculous architectural change in Mediæval times.

THEATRES

Roman theatres were often adapted from the Greek to suit the Roman drama, and for this the auditorium, with its tiers of seats one above the other, was restricted to a semicircle (p. 109). The central area at the ground level, which in Greek theatres was occupied by the chorus, became part of the auditorium and was assigned to senators and other dignitaries. The stage increased in importance and was raised and brought into immediate connection with the auditorium. Roman theatres were not only hollowed out of a hill-side, but they were also built up by means of concrete vaulting, supporting tiers of seats, under which were the connecting corridors used for retreat in case of sudden showers.

The **Theatre, Orange** (p. 109 E, F, G, H), in the south of France, is in an unusual state of preservation, and here the auditorium, which holds 7,000 spectators, is partly constructed and partly hollowed out of the hill-side. It is 340 ft. in diameter between the enclosing walls, and has

stairways on either side of the various levels. The stage was 203 ft. wide by 45 ft. deep, and is enclosed by return walls at right angles to the wall at the back of the stage. The great wall of the outer façade, 324 ft. long by 116 ft. high, is ornamented with wall arcading, and there still remain the two tiers of corbel stones pierced with holes for the velarium poles, but the original portico has disappeared.

The **Theatre of Marcellus, Rome** (B.C. 23–13), was entirely built up on a level site, and therefore the seats of the auditorium were supported not on a hill-side, but, like those of the Colosseum, on radiating walls and concrete vaulting. It is the only ancient theatre now in Rome, and, though in a ruinous condition, portions of its semicircular auditorium still remain, consisting of two tiers of outer arcading, ornamented with superimposed Doric and Ionic Orders.

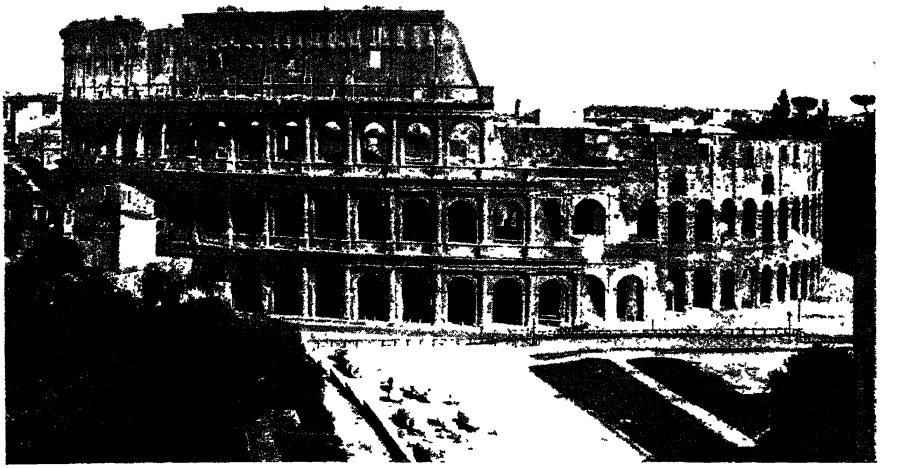
The **Odeion of Herodes Atticus, Athens** (A.D. 161) (p. 75 C), connected by an arcade with the Theatre of Dionysos (p. 112), is Roman in plan and is partly hewn out of the Acropolis rock and partly constructed, and its marble seats accommodated 6,000 people ; while cedar wood, found buried on the site, would suggest that there may have been a roof to the stage.

The two theatres at Pompeii, as well as those at Taormina and Syracuse in Sicily, at Fiesole near Florence, at Ostia near Rome, at Timgad in North Africa, and Aspendus in Asia Minor, are other Roman theatres.

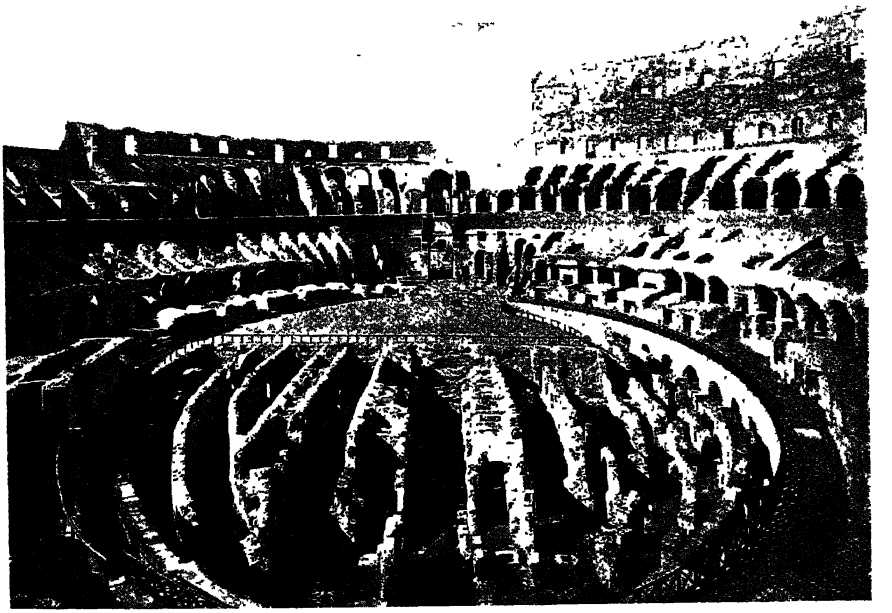
AMPHITHEATRES

Amphitheatres, unknown to the Greeks, are characteristically Roman buildings found in every important settlement and are good exponents of the character and life of the Romans, who preferred displays of mortal combats, considered to be a good training for a nation of warriors, to the tame mimicry of the stage. Gladiatorial combats had their origin in funeral religious rites connected with human sacrifices to the manes of the dead. The oval amphitheatre, with its rising tiers of seats, may be regarded as a compound of two theatres, stage to stage, thus making an auditorium round an elliptical arena. In addition to their normal purposes, they were also used for naval exhibitions, and water-pipes for flooding some of the arenas still exist. Spanish bull-rings of to-day give some idea of the arrangement and uses of Roman amphitheatres. The arena, a Latin word meaning sand or beach, was so called because of the sand with which it was strewn to absorb the blood of the combatants.

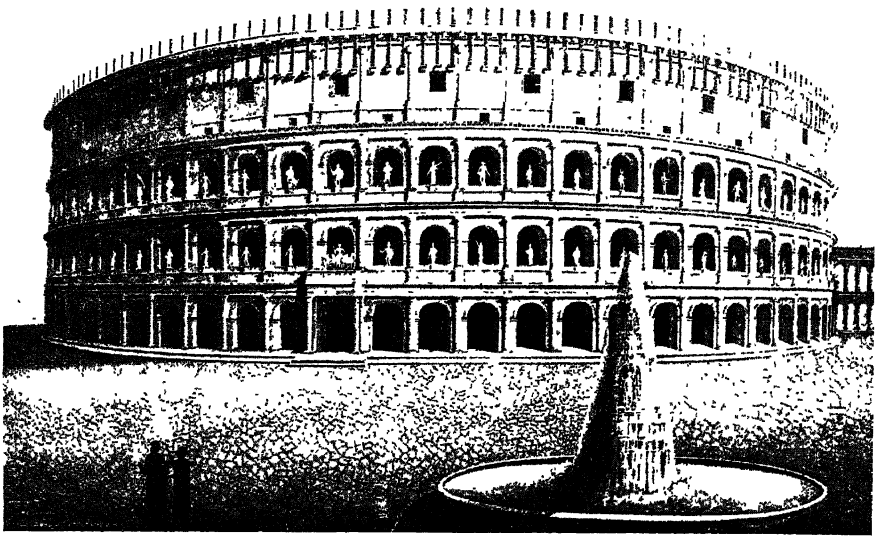
The **Colosseum, Rome** (pp. 162, 165, 166), also known as the Flavian Amphitheatre, was commenced by Vespasian (A.D. 70) and completed by Domitian (A.D. 82), with the exception of the upper storey, added in the third century. It is situated in the level valley between the Esquiline and Cælian Hills, and in plan it is a vast ellipse, 620 ft. by 513 ft., with eighty external arcaded openings on each storey ; those on the ground floor forming entrances from which the various tiers of seats were reached (p. 162). The arena proper is an oval 287 ft. by 180 ft. surrounded by a wall 15 ft. high, behind which was the podium, with the Imperial throne and seats for the Pontifex Maximus, Vestal Virgins, Senators, Prætors and other officers of State. Behind the podium rose the seats of the auditorium for 80,000 spectators, with corridors and stairs beneath, while dens for the wild beasts were under the lowest tier, on a level with the arena (pp. 165 B, 166 B). The seats, which have been removed, were in four main divisions, the two lower



A. The Colosseum, Rome



B. The Colosseum, Rome: The Arena and Auditorium



A. THE COLOSSEUM, ROME: EXTERIOR (RESTORED)



B. THE COLOSSEUM, ROME: INTERIOR (RESTORED)

or grand tiers for those of equestrian rank and for Roman citizens, separated from the third tier by a high encircling wall, above which was the top range and colonnade, all of which were reached by stairs from the surrounding corridors placed at intervals between radiating walls (p. 165 B). The construction is notable for the skilful combination of materials, according to the purpose to which they were applied. The component parts of the concrete vary thus: (i) lava was used for solid foundations, (ii) tufa and brick for the supporting walls, (iii) pumice stone for the vaults to reduce their weight (p. 162 B). Travertine blocks, set without mortar and held together with metal cramps, were used in the façade, while marble was employed for the columns, seats, and ornament. The supporting mass has been calculated to occupy as much as one-sixth of the whole area of the building, and consists of wedge-shaped piers, radiating inwards and supporting concrete vaults sloping downwards towards the centre, all producing a structure of great inherent strength and consequently difficult to destroy—a fact well expressed by the line:

"When falls the Colosseum, Rome shall fall."

The external façade, 157 ft. 6 ins. high, is divided into four storeys, the lower of which are pierced with arches and ornamented with half-columns of the Tuscan, Ionic, and Corinthian Orders, while the top storey has Corinthian pilasters, with corbels between to support the masts of the velarium which was drawn across the auditorium (pp. 162 A, B, 166).

Some of the special architectural features of this wonderful building are: (i) the massive piers which support the three tiers of apparently countless arcades which encircle the exterior and form covered ambulatories; (ii) the decorative use of the Classic Orders of architecture, which are superimposed and are thus in strong contrast to the Greek use of single Orders; (iii) the grand sweeping lines of the unbroken entablatures round the building (p. 166 A). The proportions of the attached columns, which all have the same diameter, are unusual, for the Tuscan columns are about $9\frac{1}{3}$ diameters high, and the Ionic and Corinthian about $8\frac{3}{4}$ diameters.

The Colosseum is of a type unique among ancient buildings. The structural problems involved were engineering in character, and all the more so because the Romans built up the whole gigantic edifice without that extraneous support which the Greeks secured in theatre building, by scooping the auditorium out of the earth. Here, then, is an entirely new departure made possible by the invention and use of concrete, employed not only in corridors and cells, even under the arena itself, but also in multitudes of raking vaults, which formed the almost indestructible foundations of each of the four tiers of seats reared one above the other in a great ellipse, to the crowning colonnade. Greek architecture had been simple in appearance and self-evident in design, with columns standing on a stylobate below and supporting an entablature above. Roman architecture, especially as carried out first in the Theatre of Marcellus and afterwards in numerous amphitheatres, became complex in appearance and hidden in design; for not only were columns placed in front of piers, but there were columns above columns, entablatures above entablatures, and arches above arches, while radiating vaults round the whole building were hidden supports to the auditorium seats. In the Greek theatres the steps which radiated at regular intervals to the various ranges of seats were slabs of marble between the seats; in a Roman amphitheatre the stairs emerged at intervals from the vaulted

supporting corridors which swept round the building. Stupendous in proportions, complex in structure, and yet consistent in the constant repetition of the external design, the Colosseum compels alike awe and admiration of a nation who conceived and carried to completion such an immense undertaking to serve popular amusements. The Colosseum is still magnificent, even in its ruin, and recalls the gladiatorial contests, the naval displays, and the martyrdom of Christians which took place within its giant walls before it became a Mediæval fortress or was plundered to provide building materials for Renaissance palaces and churches.

The **Amphitheatre, Verona** (A.D. 290) (p. 171), is in unusually good preservation, and nearly all the stone seats are intact, although only four complete bays of the upper part of the external wall are standing.

There are Amphitheatres at Pompeii (B.C. 70), Pozzuoli, Capua, Syracuse, Pola, Nîmes, Arles, and El Djem (near Carthage), and there are some rough remains known as the "Maumbury Rings" at Dorchester, besides the recently excavated Amphitheatre at Caerleon (Monmouth), in England.

CIRCUSES

The plan of a Roman circus, like that of a Greek hippodrome, was probably based upon the Greek stadion, which was, however, principally used for foot races and athletic sports, and one usually formed part of the Roman thermæ. The Roman circus was designed for chariot and horse races.

The **Circus Maximus, Rome** (p. 172 B, C, D), so called from its great size, was rebuilt by Julius Cæsar in the valley between the Aventine and Palatine Hills, but has long since disappeared. It was restored by Augustus, and it is on record that no less than 3,500 beasts were killed in the circus in his reign when, as the Colosseum was not yet built, it served as an amphitheatre. Later emperors, such as Vespasian, Titus, and Hadrian, enriched it with costly marbles, mosaics, columns, and statues, and it must have been one of the most magnificent buildings of its time. The obelisk now in the Piazza del Popolo was originally placed by Augustus on the spina or dividing wall, which ran down the middle of the arena in a slightly oblique direction, so that the chariots might have more room at the starting end. The restored view (p. 172 D) shows its probable appearance in the fourth century of our era. It measured about 2,000 ft. long and 650 ft. wide, and, according to Pliny (*Hist. Nat.* XXXVI, 102), it held 250,000 spectators. The same authority gives detailed information of the number of wild beasts, from elephants and lions to porcupines, which were slaughtered. The "carceres" held the chariots and horses, and rising on either side were the raking seats of the auditorium. The bas-relief gives a good idea of a racing quadriga (p. 172 C) and the relief on a lamp shows the triumphant victor in a race (p. 172 B).

The **Circus of Maxentius, Rome** (A.D. 311) (p. 172 A), of which vestiges still remain, consisted of a long, open, circular-ended arena with a "spina" on its longer axis, and was surrounded by tiers of marble seats, supported on raking vaults. At one end of the arena were the "carceres" or stalls for horses and chariots, with a central processional entrance and two side entrances, and at the opposite end was the "Porta Triumphalis," and the whole was enclosed by a concrete wall. The circuses of Domitian, Hadrian, Nero, Flaminius, and Sallust were other important examples in the Imperial City.

TOMBS

Roman tombs are much more numerous than the Greek and are similar to the Etruscan, such as that of Regulini-Galassi at Cerveteri. The Romans practised both forms of burial, cremation and interment, and thus sarcophagi for the body and urns for the ashes are sometimes found in the same tomb chamber. During the first three centuries of the Christian Era, the body of nearly every emperor was burnt on a magnificent pyre, from which an eagle was released to symbolise his escaping soul. In the second century, when cremation became less usual, wealthy citizens were embalmed on their death and placed in massive and costly sarcophagi.

The Romans had five classes of burial places: Cæmetaria, Monumental tombs, Pyramidal tombs, Temple-shaped tombs, and others included under Eastern tombs.

1. *Cæmetaria* or subterranean vaults contained both columbaria and loculi. "Columbaria" (p. 177 Q), so named because of their resemblance to pigeon-holes, were niches formed in the rock to receive a vase containing the ashes of the deceased, and with the name inscribed thereon. "Loculi" or recesses for corpses were sealed with a front slab inscribed with the name, as in the tomb of the Gens Cornelia, Rome. Sarcophagi, often beautifully carved with figures and festoons, and surmounted by lids like roofs terminating in scrolls, were also placed in the vaults (p. 177 P). Later these vaults were called Catacombs from "ad Catacumbas," a district in Rome, where many are found.

2. *Monumental tombs* consisted of square or circular tower-shaped blocks, on a quadrangular base or podium, crowned with a pyramidal roof, and they may have their prototype in the prehistoric tumulus of earth with its ring of stones.

The **Tomb of Cæcilia Metella, Rome** (B.C. 60) (p. 177 J), is a landmark on the Via Appia. It has a podium, 100 ft. square, supporting a circular mass 94 ft. in diameter in which was the tomb chamber containing the sarcophagus, now in the cortile of the Farnese Palace, Rome. The exterior, faced with travertine, was crowned by an entablature, the frieze of which is carved with ox-skulls and festoons, above which there was probably a conical roof.

The **Mausoleum of Augustus, Rome** (B.C. 28), was erected for himself and his heirs. Little is now left of this monumental tomb, but it is known, from descriptions of Strabo, Tacitus, and others, to have had a square base surrounded with columns, supporting a circular mass, 220 ft. in diameter, which contained the mortuary chambers. The upper portion consisted of a mound of earth laid out in terraces, planted with cypres and evergreen trees, and crowned with a colossal statue of Augustus. In the Middle Ages it was converted into a fortress by the Colonna family, and in the eighteenth century a theatre was formed in its precincts.

The **Mausoleum of Hadrian, Rome** (A.D. 135) (p. 177 E, F, G), one of the most important of these tombs, is now the Castle of S. Angelo. It originally consisted, as shown in the conjectural restoration, of a square podium about 300 ft. each way and 75 ft. high, all faced with white marble and with equestrian groups at angles, surmounted by an immense circular tower, 240 ft. in diameter and 150 ft. high, with a peristyle of marble and porphyry columns with statues in each intercolumniation, capped by a conical marble dome in steps, planted with trees and crowned by a quadriga. It is built of concrete, and towards the centre of the mass the sepulchral

chamber was formed to which converging passages slope upwards from the ground level (p. 177 E, F). The tomb chamber in the centre of the Mausoleum (p. 177 F) was lined with marble and protected by a trap-door arrangement, and the sarcophagus of Hadrian was placed in the centre. This sarcophagus, afterwards used as a tomb by Pope Innocent II, was destroyed in the fire at S. John Lateran in the fourteenth century, but the immense lid of Egyptian porphyry is now used as a font in the Baptistery of S. Peter's. The monument has been much despoiled by the Goths and later Vandals, and also much altered, for during the Middle Ages it was converted by the Popes into a fortress, was afterwards used as barracks, and is now a museum.

3. *Pyramidal tombs* were probably due to the introduction of Egyptian ideas after the conquest of Egypt (p. 16). The **Pyramid of Cæstius, Rome** (B.C. 12) (p. 177 K), is formed of concrete faced externally with white marble, and has a tomb chamber the vaults and walls of which are decorated with figure paintings.

4. *Temple-shaped tombs* with prostyle porticoes were often erected along the roads outside cities, as on the Via Appia, Rome, and in the Street of Tombs, Pompeii; for burial was not allowed within the city.

The **Tomb of Nævoleia Tyche, Pompeii** (p. 177 M), has a portico giving access to an upper mortuary chapel, which contained, besides the cinerary urns, statues of deities and portraits or busts of the deceased members of the family; while surmounting the tomb is the sarcophagus with sculptured relief and inscription tablet. The walls have coloured reliefs in stucco, as in the Tomb of the Pancratii on the Via Latina, Rome. There was often a subterranean chamber for the sarcophagi and niches in the walls for cinerary urns.

5. *Eastern tombs.* There are Roman tombs in the districts round Palmyra, Jerusalem, Petra (Syria), Caria (Asia Minor), and Cyrene (North Africa), some of which are rock-cut and some structural.

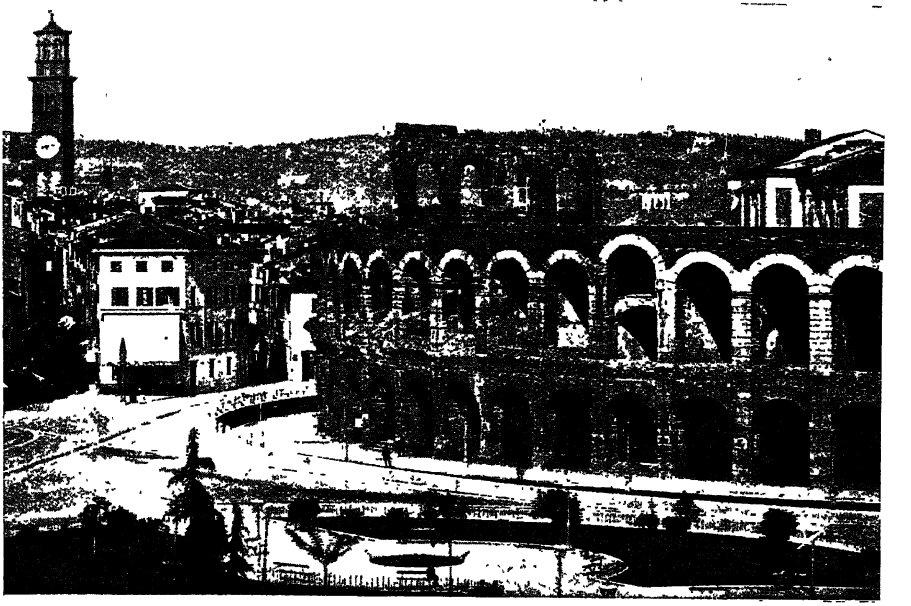
The **Tomb of "El Khasne," Petra** (A.D. 150) (p. 177 N), is one of the most interesting of all the rock-cut tombs in that district, which number over 750. The façade, 65 ft. high, is of a debased type of architecture; the lower storey has a hexastyle Corinthian portico from which central and side doors lead into tomb chambers, while the upper storey also has columns supporting a broken pediment and a central circular structure surmounted by a conical roof and urn.

The **Tomb, Mylassa** (p. 177 A–D), in Asia Minor, is one of the most interesting of the latter class; for the dome is constructed of horizontal courses of stone, as in the celebrated Jaina domes of India (p. 789), and it is the only instance of this treatment in Roman structures. The Tomb at Dougga (p. 177 R), near Tunis, is somewhat similar, but has a walled-up colonnade.

Cenotaphs or memorial monuments to persons buried elsewhere were also occasionally erected, as in the following instances:

The **Tomb of the Julii, S. Remy** (B.C. 100) (p. 177 H), in Provence, is a cenotaph, and consists of a high pedestal ornamented with bas-reliefs and supporting engaged Corinthian angle columns with arched openings between. Above is a circular storey with fluted Corinthian columns and entablature, crowned with a conical stone roof. There is a similar, though more slender, cenotaph at Wadi Tagiti, North Africa, which has a high podium with angle columns surmounted again by four columns which support an entablature and pyramidal roof.

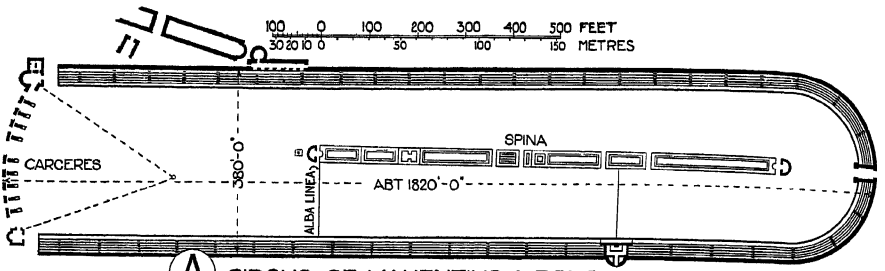
The **Igel Monument, near Trèves** (A.D. 250) (p. 177 L), is of similar



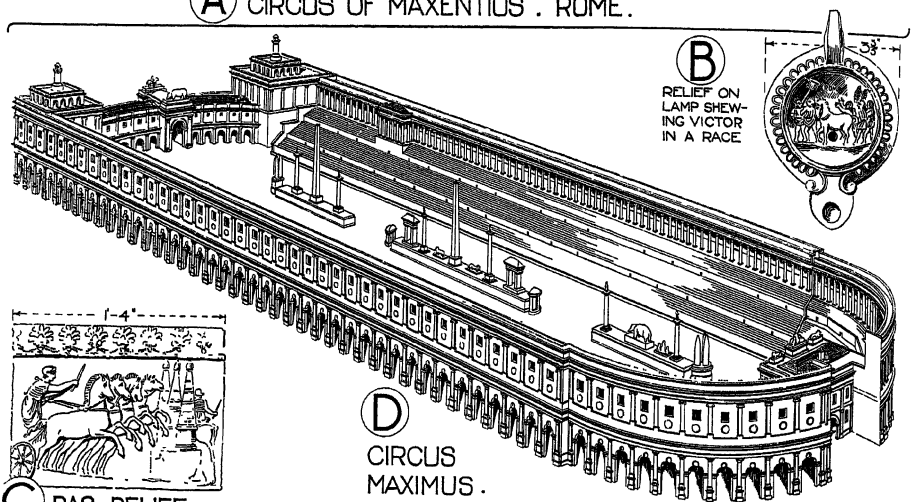
A. The Amphitheatre, Verona



B. The Amphitheatre, Verona: The Arena and Auditorium



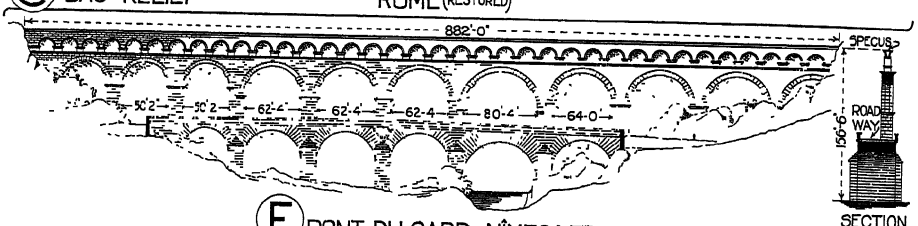
A CIRCUS OF MAXENTIUS : ROME.



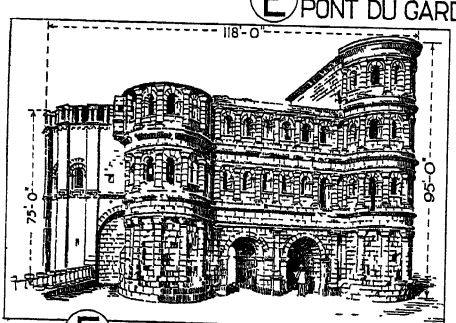
B RELIEF ON LAMP SHEWING VICTOR IN A RACE

C BAS-RELIEF

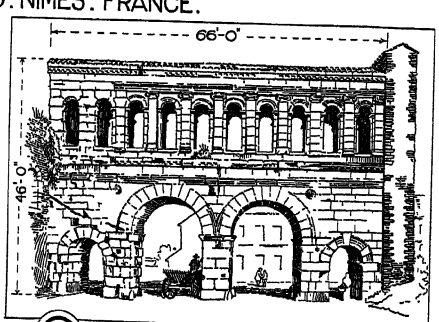
D CIRCUS MAXIMUS. ROME (RESTORED)



E PONT DU GARD. NÎMES : FRANCE.



F PORTA NIGRA : TRÈVES



G PORTE S.ANDRÉ : AUTUN

design, erected by the Secundini family. It consists of a sculptured podium about 16 ft. square, supporting an intermediate stage with an Order of Corinthian pilasters, enclosing a large sculptured panel above which comes an attic surmounted by a sculptured pediment and crowned by a curved pyramidal roof, terminating at a height of 75 ft. above the ground.

TRIUMPHAL ARCHES

Triumphal arches erected to emperors and generals had either one or three openings and the piers were faced with Corinthian or Composite columns. They were adorned with statuary and bas-reliefs relating to the victorious campaigns which they commemorated, and were usually surmounted by an attic storey for the dedicatory inscription.

The **Arch of Titus, Rome** (A.D. 81) (p. 178), of the single-arch type, commemorates the capture of Jerusalem in A.D. 70. On each side are semi-engaged columns with three-quarter columns at the angles, and these are the earliest known examples of the Roman Composite Order (p. 178 G). The soffit of the archway is ornamented with deeply recessed coffers, and a relief in the centre represents the apotheosis of Titus. On one side of the opening is a carved relief of the Emperor in a triumphal car, and on the other is a representation of the spoils taken from the Temple at Jerusalem. The keystones, which project considerably to support the main architrave, are also richly carved and are faced with figures of Roma and Fortuna (p. 178 A). The attic storey, with the dedication, was originally surmounted by a bronze quadriga (p. 178 F).

The **Arch of Trajan, Ancona** (A.D. 113) (p. 181 J), was erected astride a causeway in honour of that emperor, who had made the harbour. It is of marble and is well preserved, although most of its bronze enrichments have disappeared. It is approached by a flight of steps and has a high podium with an archway 10 ft. wide, flanked on both sides by pairs of fluted Corinthian columns on pedestals, supporting an entablature and attic stage for inscriptions. The total height is 61 ft.

The **Arch of Trajan, Beneventum** (A.D. 114) (p. 310 D), is one of the best-preserved Roman structures in South Italy ; it somewhat resembles the Arch of Titus, Rome, and forms a story in marble of Trajan's life and policy. Some of the sculptures are in the British Museum.

There are arches of this type at Pola, Susa (B.C. 7), Aosta, Rimini (A.D. 27), and Athens. The archways in London at Hyde Park Corner and Constitution Hill are modern examples of the single-arch type.

The **Arch of the Goldsmiths, Rome** (A.D. 204) (p. 178 H, J, K), erected in honour of Septimius Severus, is not a triumphal arch, nor is it of arched construction, for the opening is spanned by a horizontal entablature ; while the workmanship is poor and over-elaborated. It adjoins the Campanile of the Church of S. Giorgio in Velabro, and with it shows the continuity of successive periods of architecture.

The **Arch of Septimius Severus, Rome** (A.D. 204) (pp. 139, 140, 181 A–G, 310 E), of the triple-arch type, was dedicated to the Emperor and his two sons to commemorate their Parthian victories. It is of white marble, and the three archways rest on piers, in front of which are detached composite columns on pedestals. The central archway, with a richly coffered semi-circular vault, has lateral openings to the side archways. A staircase in the south pier leads to the summit, on which were statues of the Emperor and

his two sons, Caracalla and Geta, in a quadriga or four-horse chariot, with soldiers on either side.

The **Arch of Constantine, Rome** (A.D. 312) (p. 181 H), built in honour of Constantine's victory over Maxentius, is of fine proportions. It has eight monolithic detached Corinthian columns supporting an entablature returned back to the wall, and on the attic storey was a quadriga. Many of the reliefs were brought from the arch of Trajan and represent incidents of his reign.

The **Arch at Orange,** in France, which is one of the finest triumphal arches outside Italy, has Corinthian half-columns between the arches and three-quarter columns at the angles. The Marble Arch, London, is a modern instance of the triple-arch type.

TOWN GATEWAYS AND ARCHWAYS

Gateways were erected as entrances to towns or bridges, and formed part of the protective circuit, as in the great walls of old Rome and many other cities, such as Verona.

The **Porta Nigra, Trèves** (A.D. 275) (p. 172 F), was part of the city walls and is one of the best preserved of such gateways. The structure, 115 ft. wide and 95 ft. high at its highest part, has a double archway defended by portcullises and leading to an unroofed court which could be defended against besiegers. The façade has storeys of roughly executed and unfinished Tuscan Orders.

The **Porte S. André, Autun** (p. 172 G), in the ancient fortifications of the town, is an unusual gateway with four archways—two for carriages and two for foot-passengers—surmounted by an arcaded gallery, decorated by Ionic pilasters, connecting the ramparts on either side. There is another gateway in Autun, similar in design except that the pilasters to the arcaded gallery are Corinthian.

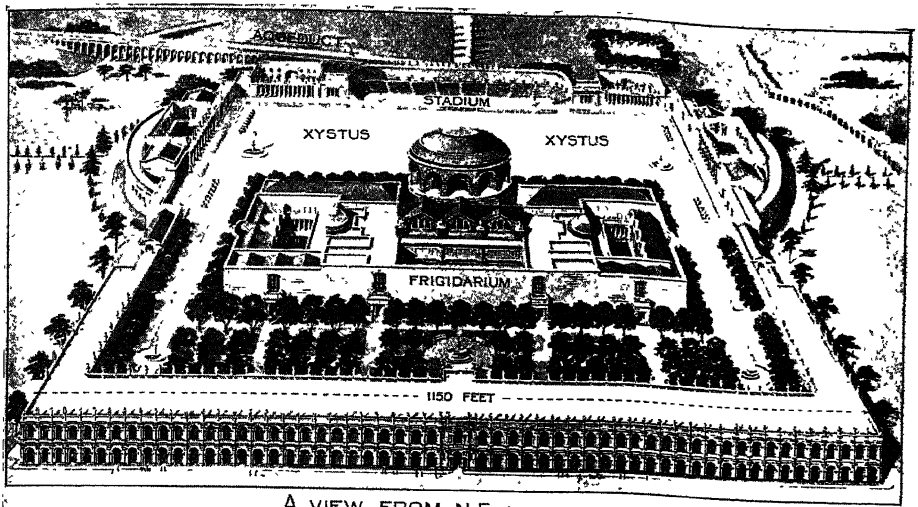
The **Porte de Mars, Rheims,** and the **Porta Aurea, Spalato** (Palace of Diocletian) are among the best-known gateways, and the walled towns of Roman Britain, such as London, York, Colchester, and Lincoln, must have had similar archways.

The **Arch of Janus Quadrifrons, Rome** (p. 178 M), built in the Forum Boarium early in the fourth century, is a four-way arch at the junction of four roads. It is of debased work built about the time of Constantine, and has a simple cross-vault (p. 178 L) with brick groins—probably a prototype of Gothic ribbed vaults.

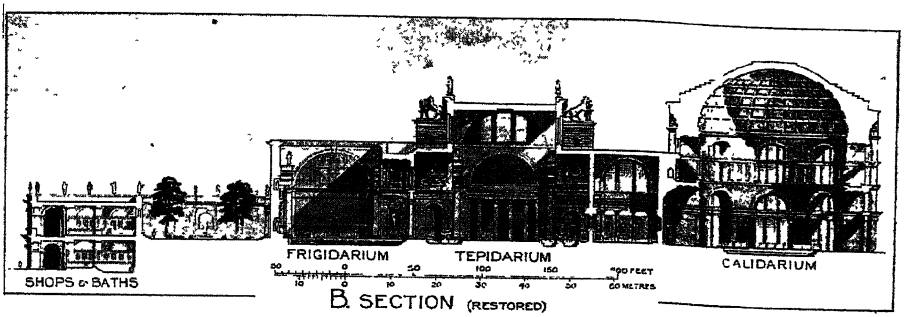
The **Arch of Caracalla, Tebessa** (p. 181 K), is a marked feature of this interesting city in Algeria. It formerly stood at the meeting of four roads in the centre of the Roman town, but it is now attached to the city walls built by Justinian in A.D. 535. It occupies a square of 36 ft. with archways 16 ft. wide on each front, flanked by detached Corinthian columns on pedestals, surmounted by an entablature with a frieze of unusual depth for inscription.

There are similar arches at Palmyra, Timgad, and elsewhere in North Africa.

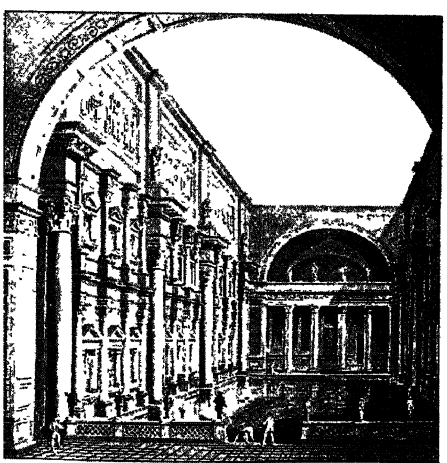
Gateways were sometimes added either at the ends or in the centre of bridges as at the Roman bridge, Alcantara, which has a portal over the central pier.



A. VIEW FROM N.E. (RESTORED)



B. SECTION (RESTORED)

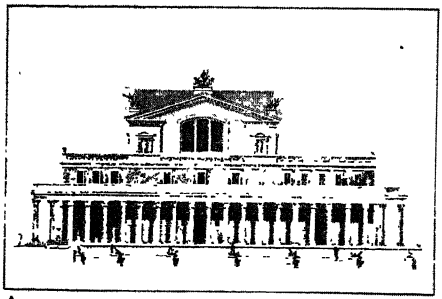


C. THE FRIGIDARIUM (RESTORED)

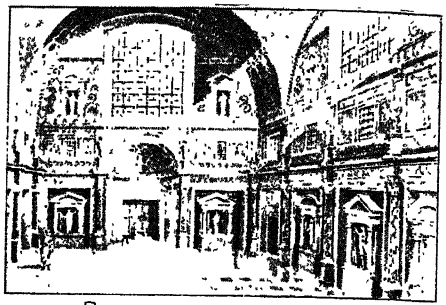


D. THE TEPIDARIUM (RESTORED)

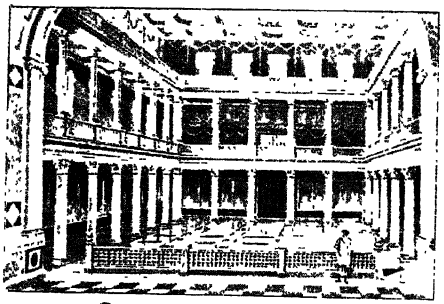
THE THERMÆ OF CARACALLA, ROME



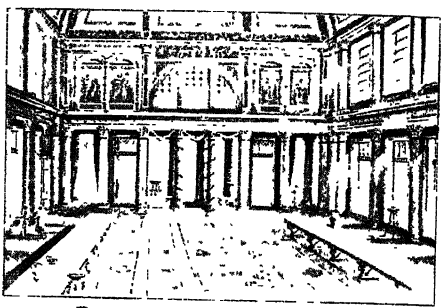
A. N. FACADE OF PALACE OF DOMITIAN (RESTORED)



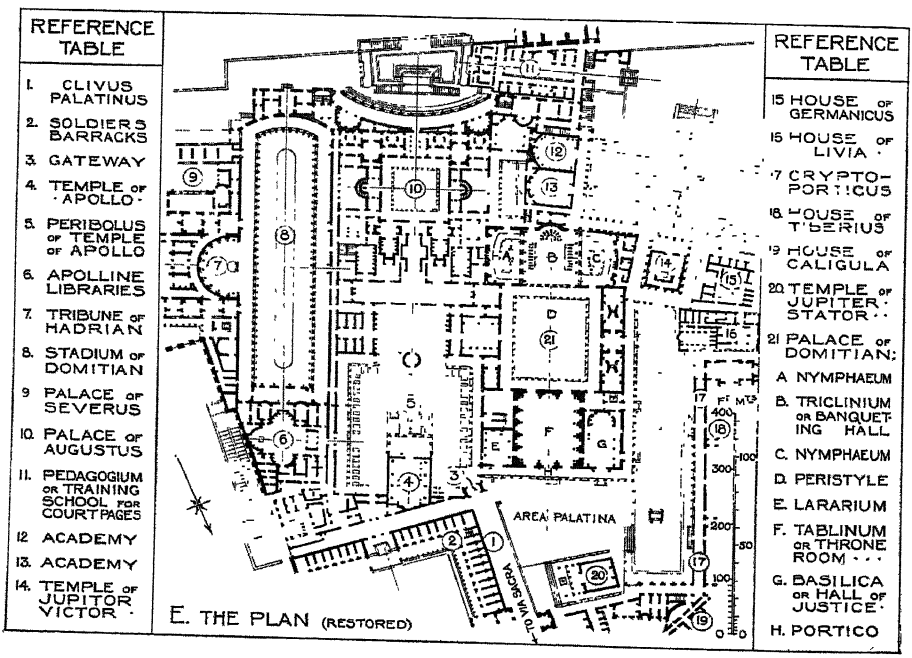
B. THE TABLINIUM (RESTORED)



C. THE BASILICA (RESTORED)



D. THE TRICLINIUM (RESTORED)



THE PALACES OF THE EMPERORS ON THE PALATINE HILL, ROME

PILLARS OF VICTORY

Pillars of Victory or memorial columns were erected to record triumphs of victorious generals.

Trajan's Column, Rome (A.D. 114) (pp. 139 B, 182), was adjacent to his Basilica and stood in an open colonnaded court carrying galleries at different levels, from which the bas-reliefs on its shaft could be viewed (p. 157 B).

> "The sculptures wind aloft
> And lead, through various toils, up the rough steep
> The hero to the skies."

It is a Roman Doric column with a total height of 115 ft. 7 ins. In the pedestal, ornamented with sculptured trophies, is an entrance to the tomb chamber of Trajan. The shaft, 12 ft. 2 ins. in diameter, contains a spiral staircase lighted by small openings and was surmounted by a statue of Trajan, since replaced by that of S. Peter. The bas-reliefs illustrating incidents of Trajan's war with the Dacians were probably intended to represent the unwinding of a parchment scroll (p. 182 E, F). There are 2,500 human figures, full of dramatic vigour, and many incidents of military campaigning by land and water, all carved on a spiral band over 800 ft. long and about 3 ft. 6 ins. wide. There is a full-sized plaster reproduction in the Victoria and Albert Museum.

The **Column of Antoninus Pius, Rome** (A.D. 161), of which the pedestal now stands in the great hemicycle of the Giardino della Pigna of the Vatican, was founded on the design of Trajan's column.

The **Column of Marcus Aurelius, Rome** (A.D. 174) (p. 182), was erected in the Piazza Colonna to commemorate the Emperor's victory on the Danube. It resembles Trajan's column and formerly stood in front of a temple dedicated to the Emperor. The marble pedestal is surmounted by a shaft 97 ft. 3 ins. high and 13 ft. 2 ins. in diameter, carved with remarkable spiral reliefs. The top is reached by 197 steps and was crowned by the statue of Marcus Aurelius till it was replaced (A.D. 1589) in the time of Pope Sixtus V by the existing statue of S. Paul. The spiral band winds round the column in twenty tiers, and represents the campaigns of Marcus Aurelius against the German tribes north of the Danube. One relief (p. 182 H) shows Marcus Aurelius, and another (p. 182 J) represents a pontoon bridge over which Roman troops with baggage are passing.

Rostral columns (pp. 140 A, 182 G) were frequently erected in the time of the Emperors to celebrate naval victories, and took their name from the rostra, or prows of captured ships, with which they were embellished, while an inscription recorded the deeds which led to their erection.

PALACES

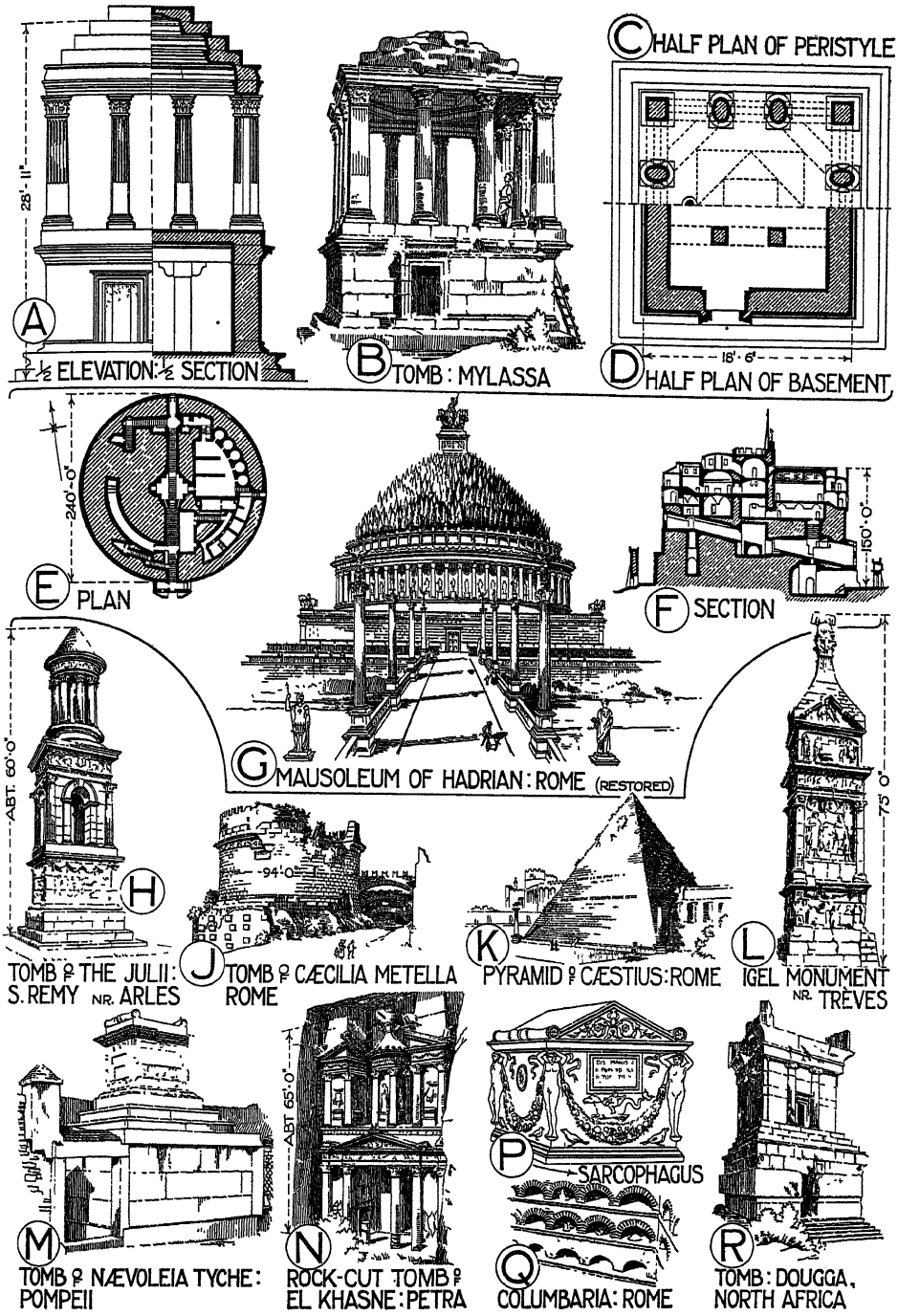
The **Palaces of the Emperors, Rome** (pp. 140 B, 174 [2]), are impressive, even as ruins, of which enough remain to show their vast extent and imposing character. Excavations on the Palatine Hill, started by Napoleon III in A.D. 1863, and since continued by the Italian Government, have revealed remains of a group of magnificent palaces which were commenced by Augustus (A.D. 3), added to by Tiberius, Caligula, Vespasian, Titus, and Domitian, and remodelled with gigantic additions by Septimius Severus. The palaces, which crowned the Palatine and looked down on the centre of

civic life in the valley below, were approached from the Forum along a "clivus" or rising slope which branched off from the Via Sacra, west of the Arch of Titus.

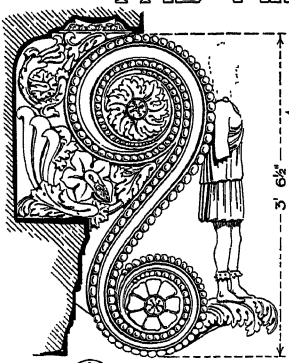
The principal portico of the palace (p. 174 [2] A), of cippolino columns, led into the public halls, the Tablinum or throne-room (p. 174 [2] B), flanked on one side by the Temple of the Lares or Imperial household gods, and on the other by the Basilica or Hall of Justice (p. 174 [2] C). Thus, according to tradition, the Imperial power was firmly planted, in architectural planning at any rate, between religion and justice. Directly beyond the throne-room was the Peristylium, a square garden surrounded by marble colonnades designed for court life and pageantry. This, in its turn, opened into the Triclinium or Banqueting Hall (p. 174 [2] D), with its three couches for reclining guests. This social sanctum of time-honoured hospitality was remote from the distraction of the public courts and looked out into the peristyle and two nymphæa or open gardens with flowering plants, playing fountains, and running water. There were also many minor chambers for service and sleeping, such as would naturally be required for a palace retinue. The disposition of the buildings was governed by axial lines and thus magnificent vistas were obtained, while irregular spaces, caused by later additions, were rendered symmetrical by the introduction of hemicycles and other devices which disguised the different angles at which the buildings had to be placed in relation to each other, a method frequently used by modern architects. Not only were the Imperial palaces on the Palatine imposing in extent, plan, and proportions, but both within and without they were decorated on the grand scale and in a manner made familiar to us by the revelations of the buried city of Pompeii. The floors were worked in conventional and pictorial mosaics for which the craftsmen of Italy are still famous; the walls were relieved by marble columns and painted with frescoes, and the ceiling vaults were picked out with bright colours, while everywhere there were niches for the splendid statues brought from conquered Greece.

The **Golden House of Nero, Rome** (A.D. 65), built after the great fire in the city, has become a synonym for all that is magnificent in royal palaces, but it was destroyed by the Flavian Emperors and made room for the Colosseum and Imperial Thermæ. Pliny describes the lavish ornamentation and fittings, and Raphael drew inspiration from its buried frescoes.

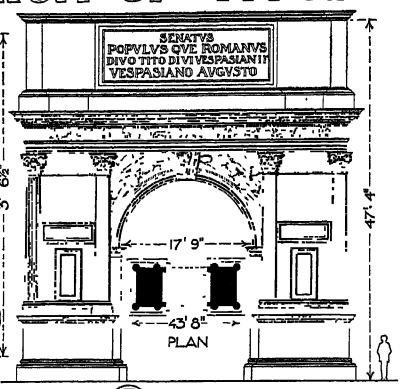
The **Palace of Diocletian, Spalato** (A.D. 300) (p. 183) now forms the greater part of the Mediæval town of Spalato in Dalmatia, which has therefore been called a city in a house. This magnificent palace, with its imposing colonnade, stretches along the sea-front of the Adriatic and may be described as a royal country house, or a château by the sea. Its original appearance can be well understood from the restored view (p. 183 C). The plan of the palace was approximately rectangular, occupying 8 acres, almost equal in extent to the Escurial in Spain (p. 683). There was a square tower at each angle, and in the centre of the north, east, and west sides were the "golden," "brazen," and "iron" gateways, flanked by octagonal towers with subsidiary towers between them and the angles. These gateways formed entrances to four porticoed avenues, 36 ft. wide, which met in the centre and gave the palace the character of a Roman camp. The two northern portions were probably for guests and principal officers of the household; while the whole of the southern portion was devoted to the palace and also included the Temples of Æsculapius (pp. 146, 183) and Jupiter, the latter sometimes known as the Mausoleum of Diocletian (p. 150). A circular


28'-11"
A
½ ELEVATION: ½ SECTION
B
TOMB: MYLASSA
C
HALF PLAN OF PERISTYLE
18'-6"
D
HALF PLAN OF BASEMENT
240'-0"
E
PLAN
F
SECTION
150'-0"
G
MAUSOLEUM OF HADRIAN: ROME (RESTORED)
ABT. 60'-0"
H
TOMB OF THE JULII: S. REMY NR. ARLES
94'-0"
J
TOMB OF CÆCILIA METELLA ROME
K
PYRAMID OF CÆSTIUS: ROME
L
IGEL MONUMENT NR. TRÈVES
75'-0"
M
TOMB OF NÆVOLEIA TYCHE: POMPEII
ABT. 65'-0"
N
ROCK-CUT TOMB OF EL KHASNE: PETRA
P
SARCOPHAGUS
Q
COLUMBARIA: ROME
R
TOMB: DOUGGA, NORTH AFRICA

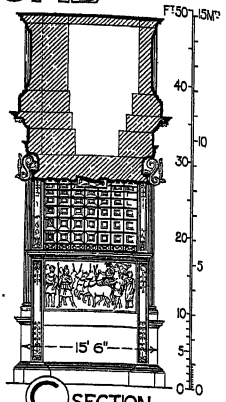
THE ARCH OF TITUS : ROME



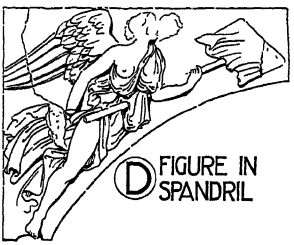
A KEYSTONE



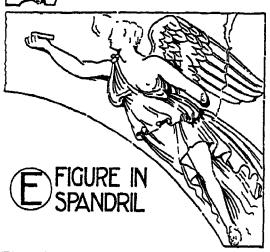
B ELEVATION



C SECTION



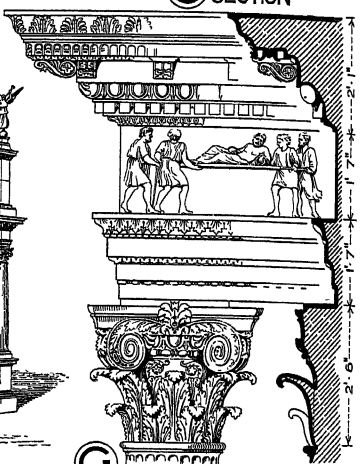
D FIGURE IN SPANDRIL



E FIGURE IN SPANDRIL

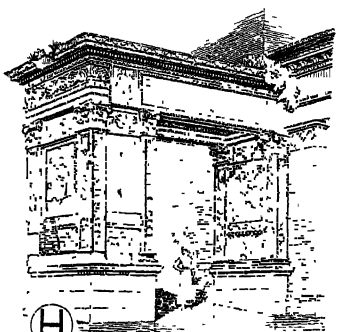


F ARCH (RESTORED)

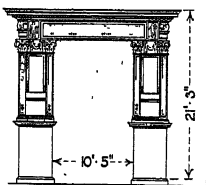


G DETAIL OF ORDER

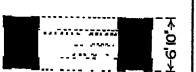
ARCH OF GOLDSMITHS : ROME



H EXTERIOR FROM S.W.



J ELEVATION (RESTORED)



K PLAN

ARCH OF JANUS : ROME



M EXTERIOR

vestibule, with a portico in antis, formed an entrance to a suite of nine chambers overlooking the sea, which included the private apartments and baths of the Emperor. The fine portico or colonnade, 524 ft. long by 24 ft., on the sea-front served as a connecting gallery and probably contained works of art (cf. Elizabethan gallery, p. 709). The detached columns of the upper portion rested on carved corbels, similar to those of the " golden gateway " (p. 183 A). The outer walls were lined internally on three sides of the palace with cells for slaves and soldiers of the Imperial retinue. The octagonal temple or mausoleum and the more lofty halls of the palace proper, visible above the enclosing walls in distant views by land and sea, were impressive features of the group. The architectural character is somewhat debased in style with broken and curved pediments and decadent detail. The palace has, however, a value as a transitional example, for the entablature of the peristyle is formed as an arch (p. 183 B) and thus loses its constructive significance, while the arches of the northern gateway rest directly on capitals, without the intervention of an entablature, and form an early instance of a principle which was carried to its logical conclusion in the Romanesque and Gothic styles.

ROMAN HOUSES

Roman dwelling-houses are of three types: (*a*) The domus or private house; (*b*) the villa or country house; and (*c*) the insula or many-storeyed tenement.

(*a*) The *domus* or private house was probably evolved from the Greek house (p. 112). An atrium formed the more public portion of the building and a peristyle beyond was the centre of the family apartments.

The " **Atrium Vestæ,**" **Rome** (pp. 139 B, 140 B) or House of the Vestal Virgins, together with the **House of Livia, Rome,** are the most interesting remains of dwelling-houses in the Imperial city.

Excavations at Pompeii and Herculaneum show that Roman houses differ but slightly in plan and disposition from the Greek dwellings which preceded them. These Pompeian houses owe their preservation to having been buried by the eruption of Vesuvius in A.D. 79, and the whole lay-out of this buried city has revealed the manner in which town-planning was standardised among the Romans. The streets were narrow, 8, 12, or 15 ft. wide, while the widest were 23 ft. 6 ins. with a roadway 13 ft. 6 ins. and paths 5 ft. wide. The houses had plain façades to the street and the frontage on either side of the entrance was let off as shops. The absence of window openings towards the street was probably due to the desire for privacy, and in this connection it must not be forgotten that glazed windows were then unknown. The rooms were lighted by openings on internal courts, as in Mediæval times in England and France, and as in Eastern houses to this day; but these openings were small, as the light was strong in the sunny climate of Italy. The remains of Pompeian houses are mostly one storey in height, but there are traces of stairs, and upper floors were probably of timber. No fireplaces or chimneys have been found, but braziers were probably used as in Italy to-day. The domestic water supply was carried by leaden pipes with " rising mains " to upper floors, with taps and other accessories which may still be seen at Pompeii.

The **House of Pansa, Pompeii** (p. 184), is a good type of the domus or private house. It has streets on three sides, the garden occupied the fourth, and besides the house proper there were shops, bakeries, and three smaller

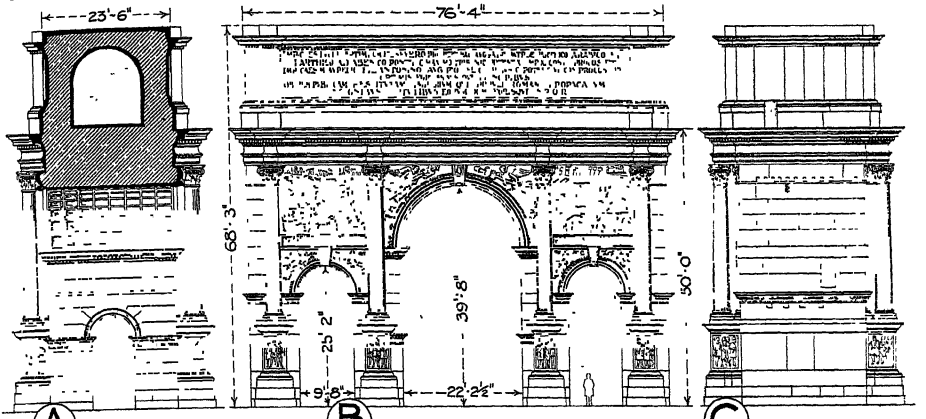
dwellings. A " prothyrum," or entrance passage, led direct from the street to the atrium, which served as the waiting-room for retainers and clients, around which were rooms for guests and servants and semi-public rooms, such as libraries, all lighted by the door openings (p. 184 D). The atrium is open to the sky in the centre with a " lean-to " or sloping roof, supported by brackets, round all four sides, and the " impluvium," or water cistern for receiving the rain-water from these roofs, was sunk in the centre of the pavement. The atrium also contained the family altar and the ancestral statues (p. 184 A). An open saloon or " tablinum " was curtained off between the atrium and peristyle, and at the side were " fauces " or passages. The peristyle was often the garden of the house, and was the centre of the private part of the building, corresponding to the Hall of Elizabethan times (p. 708) ; the sketch (p. 184 B) indicates the Doric columns between which festive garlands form a pleasing background for the entertainment in progress. " Cubicula " or bedrooms, " triclinia " or dining-rooms with different aspects for summer and winter, the " œcus " or reception-room, and " alæ " or recesses for conversation surrounded the peristyle. Dining-rooms were fitted with three couches for nine people, the recognised number for a Roman feast. Floors and walls were decorated with mosaics and fresco paintings. The kitchen and pantry were at the side of the peristyle, farthest from the entrance, but convenient for the side street.

The **House of the Vettii, Pompeii** (p. 184 E, F, G), differs from others in that the atrium, owing to the restricted site, adjoins the peristyle, which has recently been partly rebuilt and planted as an antique garden with marble tables and statuettes. The kitchen, with its cooking apparatus still *in situ*, and the triclinium, with its wall frescoes representing Classical myths, are typical of many other houses. This Pompeian house, as seen from above, has two openings lighting the atrium and a smaller court, which were protected from thieves by iron grilles, and there is a large opening to the peristyle beyond (p. 184 E).

The **Houses of the Faun, Diomede, Sallust,** and **the Tragic Poet** are famous Pompeian residences, with floors, walls, and vaulted ceilings decorated in the characteristic Pompeian style, and furnished with candelabra, lamps, vases, statues, and fountains, and many of these are in the Naples and Pompeii Museums (pp. 194, 197). The floors were of patterned mosaic, in black and white (p. 194 H, K) or coloured marbles. The walls were painted either in fresco (p. 194 D, F, G) or to imitate marble, the darkest colours of the decorative scheme being nearer the ground. Pictures were sometimes enclosed with architectural features, such as columns, so slender as to suggest a metal origin, with entablatures all represented in perspective (p. 194 B). The ceilings probably had painted and gilded timbers, and the peristyle columns were often of the Ionic type (p. 193 H, K) and roofs were covered externally with tiles or terra-cotta. The remains of these houses, as excavated in such cities as Pompeii and Timgad, reveal in the details of their arrangement the every-day life of Roman citizens. Lytton's " Last Days of Pompeii " contains imaginative descriptions of the life and dwellings of the time.

(*b*) The *villa* or country house. **Hadrian's Villa, Tivoli,** resembled a city in extent, for, with its surroundings and gardens, it occupied about seven square miles. Besides the Imperial apartments there were terraces, colonnades, palæstræ, theatres, and thermæ, restorations of which have been made by Piranesi, Canina, and others. There are remains of Roman

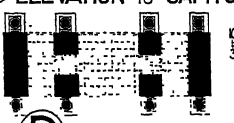
ARCH OF SEPTIMIUS SEVERUS : ROME



A SECTION — B ELEVATION TO CAPITOL — C S. ELEVATION



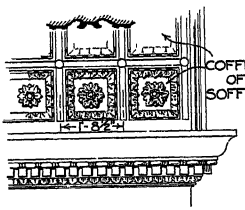
FRONT AND SIDE ELEVATIONS OF KEYSTONE



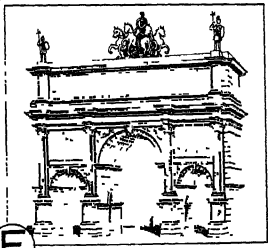
D PLAN

SCALE FOR PLAN
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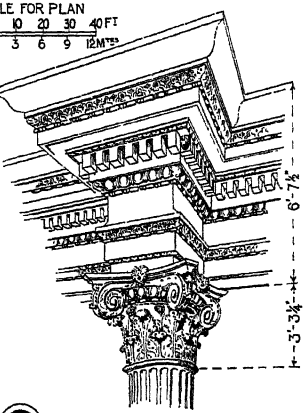
SCALE FOR ELEVATIONS & SECTION
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E DETAILS OF CENTRAL ARCH

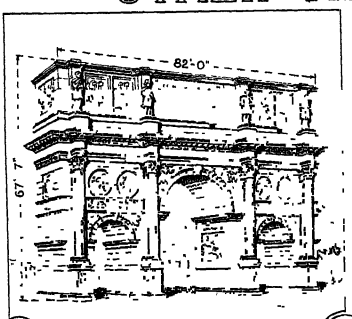


F VIEW (RESTORED)

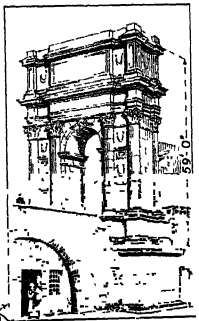


G CAPITAL & ENTABLATURE

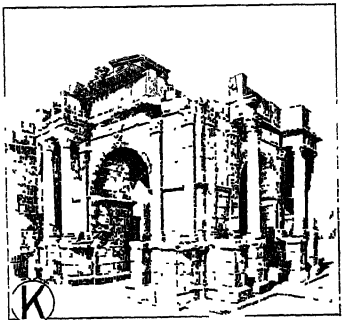
OTHER TRIUMPHAL ARCHES



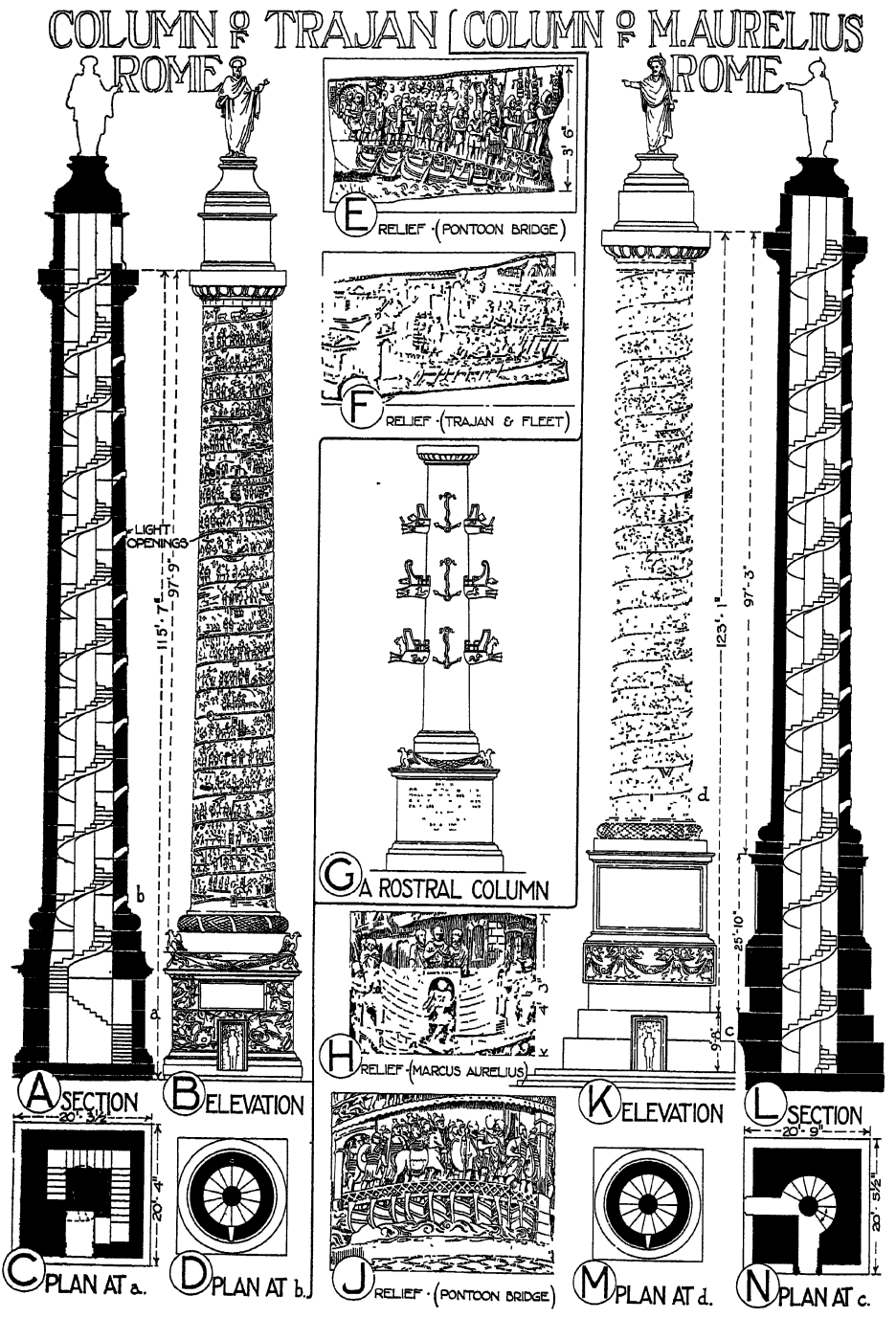
H ARCH OF CONSTANTINE : ROME



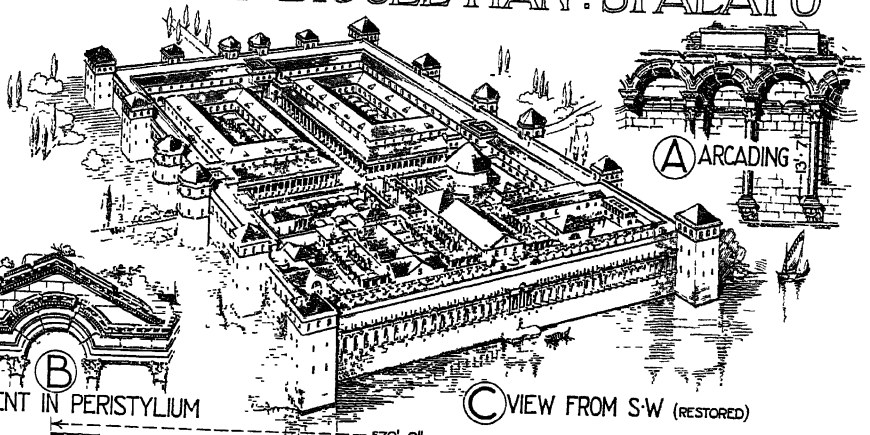
J ARCH OF TRAJAN : ANCONA



K ARCH OF CARACALLA : TEBESSA : N. AFRICA


COLUMN OF TRAJAN
ROME
COLUMN OF M. AURELIUS
ROME
3' 6"
E RELIEF · (PONTOON BRIDGE)
F RELIEF · (TRAJAN & FLEET)
LIGHT OPENINGS
115' 7" 97' 9"
123' 1" 97' 3"
25' 10"
9' 6"
G A ROSTRAL COLUMN
H RELIEF · (MARCUS AURELIUS)
A SECTION
B ELEVATION
K ELEVATION
L SECTION
20' 3½"
20' 4"
20' 9"
20' 5½"
C PLAN AT a.
D PLAN AT b.
J RELIEF · (PONTOON BRIDGE)
M PLAN AT d.
N PLAN AT c.

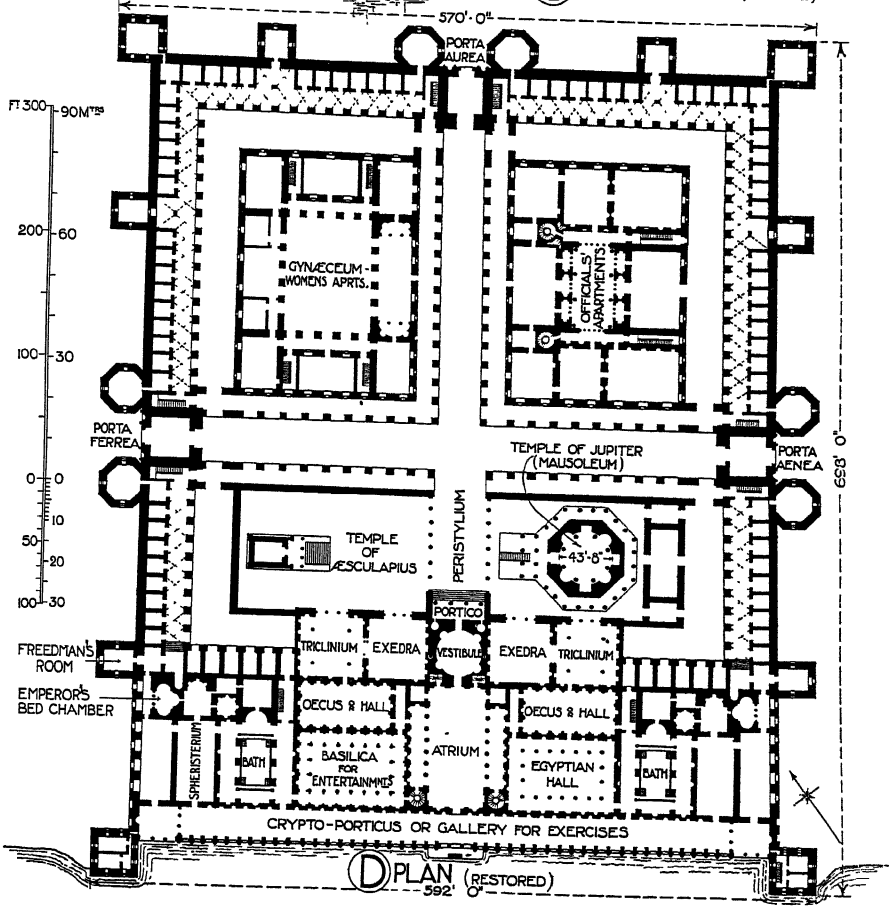
PALACE OF DIOCLETIAN: SPALATO



A ARCADING 13'-7"

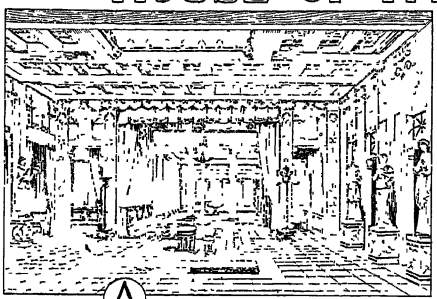
B PEDIMENT IN PERISTYLIUM

C VIEW FROM S.W (RESTORED)



D PLAN (RESTORED)

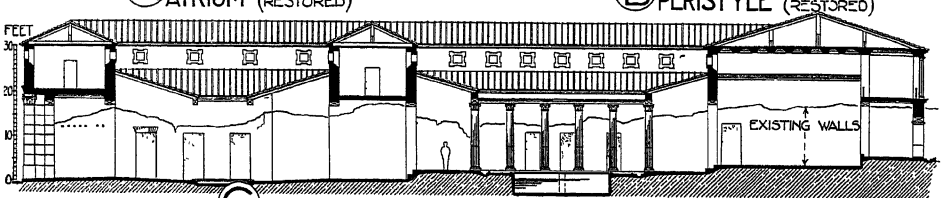
HOUSE OF PANSA : POMPEII



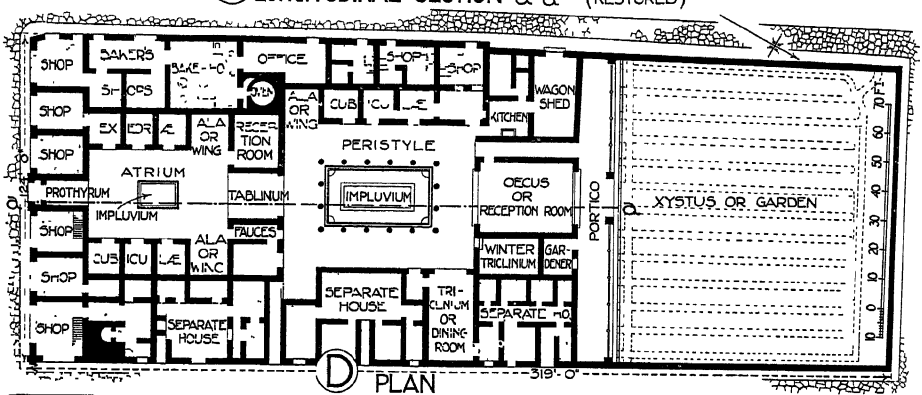
A ATRIUM (RESTORED)



B PERISTYLE (RESTORED)

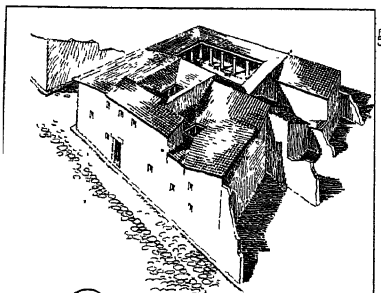


C LONGITUDINAL SECTION a-a (RESTORED)

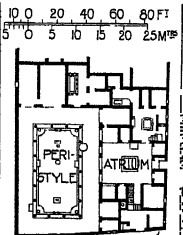


D PLAN

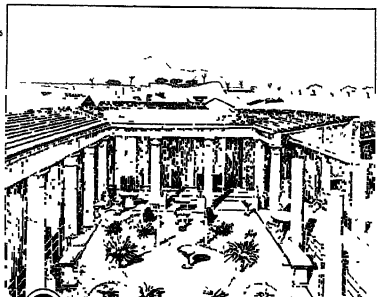
HOUSE OF THE VETTII : POMPEII



E EXTERIOR FROM N.



F PLAN



G PERISTYLE (AS EXISTING)

villas in different parts of England which show the usual type of plan and the central heating arrangements necessary for our cold climate (p. 319).

(*c*) The ***insula*** or block of tenement dwellings of many storeys seems to have resembled modern flats, or workmen's dwellings, such as must have been necessary for the slave population ; and in this connection it should be noted that a decree was issued by Augustus limiting the heights of houses in Rome to 75 ft., and it therefore seems evident that buildings of this type must have been numerous.

AQUEDUCTS

The aqueducts, which served a strictly utilitarian purpose, were, by reason of their size and proportions, striking features of Roman landscape. Ruined aqueducts throughout the Empire show the importance attached by the Romans to an adequate water supply. Immense quantities of water were required for the great thermæ and for public fountains, to say nothing of the domestic supply for the large population, and it has been computed that 350,000,000 gallons were daily poured into Rome through the eleven great aqueducts. In the days of Imperial Rome one of the most impressive sights in the Campagna must have been the long, level flights of majestic arches which bore the waters of the hills to the citizens of Rome. No more imposing triumphal procession ever entered Old Rome than that of the aqueducts bearing captive the waters of the distant hills, and no greater manifestation of the adoption of simple means to supply a need of every-day life is anywhere to be seen than in these water-carrying arches. The Romans were acquainted with the simple hydrostatic law that water rises to its own level in pipes, and the upper rooms of houses were supplied by " rising mains " in the same way as in modern buildings. As pipes could in those days only be made of costly lead or bronze, because cast iron was unknown, it was more economical to use slave labour to construct aqueducts of stone, or concrete faced with brick, with almost level water channels, either above or below ground. This system has been adopted even in modern times in the Croton Aqueduct which supplies New York City. The principle is the same in all cases. A smooth channel (" specus ") lined with hard cement is carried on arches, often in several tiers and sometimes of immense height (over 100 ft.), to convey the water from the high ground, across valleys, to the city reservoirs.

Many of them followed a circuitous course, to avoid making the slope of the channel too steep, when the source of the water was high above the level of distribution in Rome. Vitruvius (Bk. VIII, chap. vii) recommends a fall of 6 ins. to every 100 ft. in constructing aqueducts. In the time of Augustus Cæsar there were nine of these aqueducts.

The **Aqua Marcia, Rome** (B.C. 144), forms part of a triple aqueduct which, by the Porta S. Lorenzo, carried the Aqua Marcia, the Aqua Tepula (B.C. 127), and the Aqua Julia (B.C. 33)—an economical arrangement by which several channels, one above the other, are carried by one series of arches.

The **Aqua Claudia, Rome** (A.D. 38) (p. 187 A), built by the Emperors Caligula and Claudius, brought water to Rome from Subiaco, 45 miles distant ; part of its length is on solid masonry, and for 9½ miles it is borne on lofty arches, great lengths of which remain in the Campagna. It is probably the finest of all Roman aqueducts and some of the arches are over 100 ft. high ; three miles from Rome it is joined by the Anio Novus (A.D. 38), 62 miles in length.

The **Pont du Gard, Nîmes,** France (B.C. 19) (pp. 172 E, 187 B), forms part of a magnificent aqueduct, 25 miles long, constructed by Agrippa

to bring water to Nîmes from the neighbourhood of Uzès. It is in good preservation, is about 900 ft. long, and is formed of three tiers of arches, crossing the valley 180 ft. above the river Gard. In the two lower tiers the central arch is the widest and the others vary in width, while in the uppermost tier there are thirty-five arches of 14 ft. span, supporting the " specus " or water channel. The masonry is laid dry, without mortar, and some of the arch voussoirs of the intermediate tier were made to project to carry the temporary wooden framing or centering on which the arch was formed (p. 187 B).

Aqueducts at Tarragona, Segovia, Spalato, and elsewhere still testify to the importance which the old Romans attached to a good water supply, and the regulations connected with it throw a light on the detail of Roman administrative methods, both for the Imperial City and for the cities of the Roman Provinces.

BRIDGES

Roman bridges were simple, solid, and practical in construction and designed to offer a well-calculated resistance to the rush of water, and the roadway was generally level throughout. They promoted intercourse between cities and thus were factors in the spread of civilisation. Just as the arches of aqueducts carried water over land, so the arches of bridges carried land over water.

The **Pons Sublicius, Rome,** was for long the only bridge across the Tiber, and Livy records its destruction by the Roman garrison when the Etruscans were advancing upon Rome ; while Macaulay has immortalised the incident of its defence by Horatius Cocles.

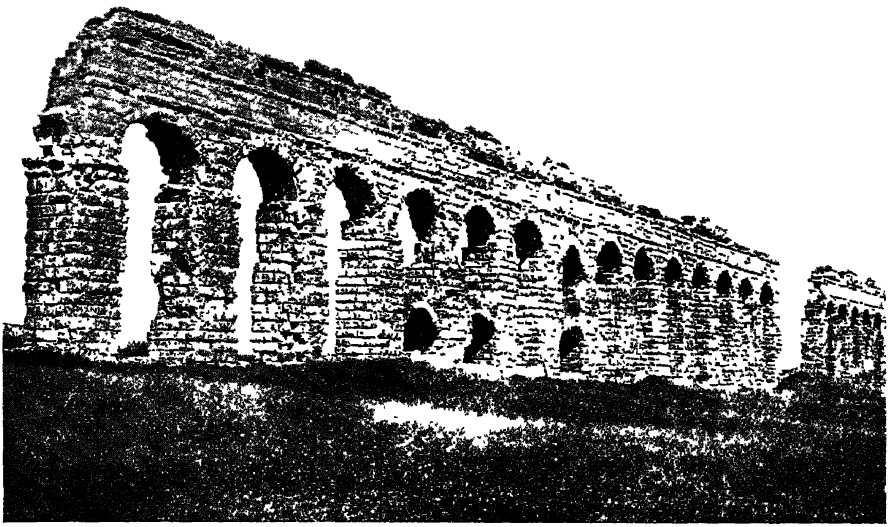
The **Pons Milvius, Rome** (B.C. 109) (p. 188 A), now known as the Ponte Molle, has semicircular arches over massive piers with protecting " starlings " or cut-waters and extra arches above them to allow the flood waters to pass through. It was here that Cicero arrested the Gaulish ambassadors and here Maxentius met death and defeat at the hands of Constantine (A.D. 312).

The **Bridge of Augustus, Rimini** (A.D. 14) (p. 188 B), is the best preserved and one of the finest ancient structures in Italy, with its stretch of five arches over the river Marecchia.

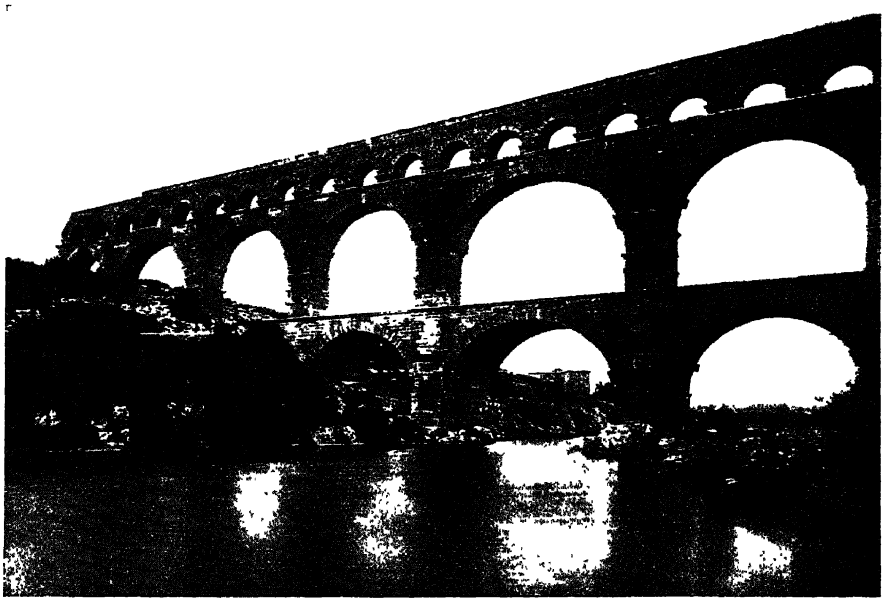
Roman bridges in Spain are of two types, both of which are equally impressive : (*a*) the many-arched type, as exemplified in the extreme length of the bridges at Salamanca and Alcantara (A.D. 105) ; (*b*) the single-arched type, such as the later Moorish and Gothic bridge at Toledo which, with the romantic sweep of its gigantic arch, spans the rocky valley of the Tagus (p. 532).

FOUNTAINS

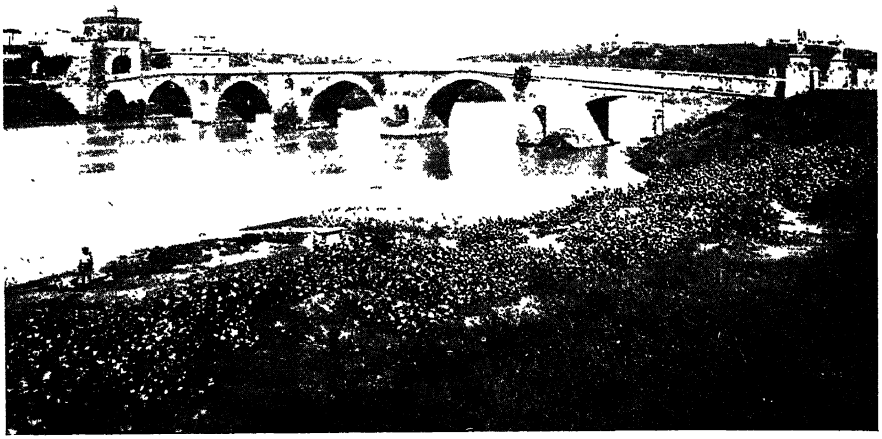
Fountains, public and private, have always been striking features of ancient and modern Rome, on account of their graceful design and the splashing of clear water in a hot and crowded city. Public fountains, which were numerous, amounting to many hundreds in the various Roman cities, were designed either as a large basin of water (" lacus "), or as spouting jets (" salientes "), or the two were combined with marble columns and statues. Private fountains existed in great numbers, mainly in the courts and gardens of houses, with great variety of design in coloured marbles and porphyries, and were often decorated with bronze statuettes. The water sometimes issued from fishes, shells, or other objects supported by a figure of a nymph



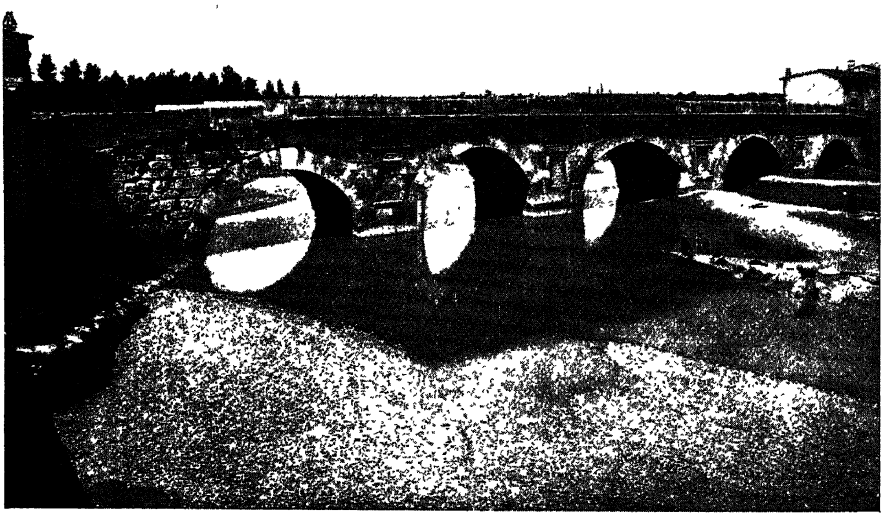
A. THE AQUA CLAUDIA, ROME



B. THE PONT DU GARD, NÎMES



A. The Ponte Molle, Rome



B. Bridge of Augustus, Rimini

and sometimes from lions' heads in wall niches lined with mosaics, as at Pompeii.

The ancient Roman regard for running waters, which almost amounted to adoration, found expression not only in triumphant aqueducts and monumental thermæ, but also in these numberless fountains in the cities which made up that great Empire. Water, ever fresh and ever changing, was used to memorialise great men and noble deeds. Water-shrines as sculptured fountains honoured the dead and served the living. This cult of water in Classic times became a continuous tradition, and we have only to look on the fountains of Mediæval and Renaissance Rome to realise how much the city owes of charm to this universal display of gushing and falling waters. Great is the mystery of water and its courses and there are still other waters in this city of many centuries, which, buried under the burden of much building, are now only known as the hidden waters of Rome.

4. COMPARATIVE ANALYSIS

GREEK	ROMAN
A. **Plans**—Plans display simplicity, beauty, and perfection of proportions which give dignity and grandeur in spite of smallness of scale. Unity and symmetry resulted from the self-contained character of the temples, while varied and unsymmetrical grouping occurs only in certain buildings like the Erechtheion (pp. 76, 98 F). The Greek ideal of life did not tend towards the erection of utilitarian buildings.	A. **Plans.**—Plans convey an impression of vastness and magnificence, and are characteristic of a powerful and energetic race. The Romans were pre-eminently great constructors, and by the invention of concrete were able to erect public buildings of enormous size, like the thermæ and basilicas (pp. 157 B, E, 158 B), besides many types of utilitarian structures, such as aqueducts and bridges required by the expanding civilisation of the Roman Empire (pp. 143 B, E, H, 153 B).
The post and beam or trabeated form of construction made for simplicity and did not lend itself to such variety and boldness of plan as did the arcuated Roman style. There is no mingling of constructive principles in Greek buildings, and the structural limitations of the trabeated style prevented the novel developments to which the arcuated style gave rise.	The arch, vault, and dome were the keynotes to the system of construction. The arch made it possible to span wide openings; vaults and domes could be thrown over large and complicated plans in which square and semicircular recesses (p 183) give boldness and variety, while the combination of trabeated and arcuated styles permits of novel types of plans.
The true arch with voussoirs was not used, but the Treasury of Atreus, Mycenæ, is roofed by a vault with the stones laid horizontal, each stone overlapping the one below, till the crown is reached (p. 70 A). This type of roofing obviously limited the size and form of the building.	The true arch with wedge-shaped blocks was continued from Etruscan times. Intersecting vaults concentrated the weight of the superstructure on piers, instead of distributing it along a continuous wall as in the Temple of Diana, Nîmes (a step towards Gothic methods of construction).
Greek temples were usually orientated, so that the rising sun might light up the statue (p. 87 G).	Roman temples, regardless of orientation, faced the adjacent forum so as to be easy of access.
B. **Walls.**—The employment of marble influenced the style; for large blocks were rubbed down by slaves after being	B. **Walls.**—The Romans revolutionised wall construction by the use of concrete. This novel and durable building

GREEK	ROMAN
fixed in position and thus gave the smoothest surface finish. Coarse stone was frequently covered with polished marble stucco to produce the same effect, as at Pæstum. The joints between the marble blocks fitted so exactly as to be almost invisible. Mortar was unnecessary because the blocks were so truly laid that the stability of walls depended solely on the laws of gravity. Metal cramps, however, sometimes connected the blocks longitudinally.	material was not special to any country, as it was made up of fragments of hard stone, or quarry debris mixed with lime, found in all parts of the Roman Empire. This concrete was faced externally with various materials, such as stone, brick, and stucco, and was decorated internally with beautiful marble, alabaster, and porphyry attached to the walls by metal cramps (p. 135). These walls were composite in character and thus differed essentially from those of the Greeks. The various types of walling are described elsewhere (p. 134).
The Anta was employed to emphasise and strengthen the angles of naos walls (pp. 97 C, 104 A).	The Pilaster, which corresponded to the Anta, was used decoratively on walls instead of half-columns (pp. 143 F, 154 A).
C. **Openings.**—Colonnades, by providing variety in the play of light and shade on the walls behind, rendered openings in walls of minor importance in the design of the exterior, and indeed colonnades are the outstanding features of Greek Architecture (p. 92 A).	C. **Openings.**—Colonnades and the new system of arcades were both in use internally and externally, and the latter occur in storeys one above the other as in the Colosseum (pp. 165 A, 166 A). Thus colonnades were largely superseded by arches and column-faced piers.
Doorways were square-headed and often crowned with a cornice supported by consoles as in the fine north doorway of the Erechtheion, Athens (p. 115 D).	Doorways were both square and semicircular-headed and became decorative features of importance in the external design of large public buildings, as in the Pantheon, Rome (p. 115 A).
Windows, except on rare occasions (p. 74), were not used in temples, as light was obtained from doorways, hypæthral or clear-story openings, and perhaps also through transparent alabaster roof slabs (p. 77).	Windows, generally semicircular-headed, were frequently divided vertically by two mullions ; but sometimes they were segmental, a shape produced after the removal of the wooden centering, by filling in the side space vertically above the springing line (p. 135 F).
D. **Roofs.**—Extreme care was bestowed upon the construction of the highly finished sloping roofs of temples. These were of timber framing (p. 79 E) covered with large slabs of marble, finished at the eaves with carved antefixæ (pp. 79 H, 86 G). The acroteria or blocks of marble at the apex and lower angles of the pediment, also carved with statuary or ornaments, were characteristic features (pp. 86 A, B, C, 87 D).	D. **Roofs.**—Vaults and domes (pp. 135, 302 A, B, 303 A) constituted the chief architectural change, and were often coffered, as in the thermæ and the Pantheon (p. 153 A). Timber framing also appears to have been employed for temples, and according to Horace there were splendid wooden coffered ceilings in the larger houses. Roof coverings were of terra-cotta, as amongst the Etruscans, of marble or of bronze as in the Pantheon. Vitruvius says flat roofs were used, as in the thermæ.
Ceilings of peristyles were coffered in square or rectangular panels of carved marble, as in the Theseion (p. 85 H, J), the Parthenon (p. 87 E, F), and Tem-	Ceilings of peristyles were coffered with geometric patterns of octagons and squares in combination, as in the temples at Baalbek, Syria (p. 151 C).

GREEK

ple of Apollo Epicurius (p. 91 B, C). Coffered timber ceilings were probably employed over the naos.

E. **Columns.**—The Orders were necessary features of the trabeated system of construction and the column with the beam or entablature is the essence of Greek architecture (p. 116). Columns were usually constructed in " drums " and the fluting was carried out after the shafts were in position.

Orders were never superimposed, except in interiors of temples (pp. 81 B, 82 A, B, 86 E, F, 87 E, F). They stood on stepped stylobates, and the only instance of pedestals supporting columns appears to have been in the Temple of Artemis, Ephesus (p. 103). There were only three Orders and their proportions seem to have been determined experimentally.

The ***Tuscan Order,*** an even simpler form than the Doric, was not used by the Greeks.

The ***Doric Order*** (pp. 80, 116 A), sturdy and dignified, was their national Order and used in the most important buildings, which were temples. It was without a base but on a stylobate, and the capital has a plain, square abacus, beneath which is the echinus, which has a varying outline (p. 80). Columns are usually fluted, and from being extremely sturdy became more slender in their proportions. The vertical plane of the architrave projects in advance of the face of the column, and the triglyphs are over the central axes of the columns except at the angles, where the triglyph is at the extremity of the frieze (p. 88).

The channels in triglyphs are rounded at the top.

The mutules, over triglyphs and metopes, slope downwards with the soffit and project beneath it.

The ***Ionic Order*** (pp. 93, 116 C) was used with great refinement of line by the Greeks. The distinctive capital has the scrolls showing on two sides only, although angle volutes are found at Bassæ (p. 93 C).

The ***Corinthian Order*** (pp. 105, 116 E) was little used by the Greeks and was introduced late in the Hellenic period, although the earliest known example in the Temple of Apollo Epicurius, Bassæ,

ROMAN

Apses of temples and basilicas were covered with coffered semi-domes, as in the Temple of Venus and Rome (p. 148 E).

E. **Columns.**—The Orders (p. 116) were often used in conjunction with the pier and arch and then lost their structural importance and became chiefly decorative, as in the Colosseum and Triumphal Arches. Columns were usually unfluted monoliths, fluting being unsuitable to granite and veined marble.

Orders were often superimposed, as in the Colosseum (p. 162 A). The Romans introduced pedestals on which they placed the column to secure greater height. Canons of proportions, as formulated by Vitruvius, were gradually standardised for all the Orders, which the Romans increased to five by adding the Tuscan and Composite.

The ***Tuscan Order*** (p. 133) has an unfluted shaft with base and simple capital and entablature (p. 757 B).

The ***Doric Order*** (p. 116 B), little used by the Romans, was perhaps too severely simple for the style of buildings they required. The Temple of Hercules, Cora, is the only Roman temple in this style, but engaged Doric columns occur in the Theatre of Marcellus. The Romans added a base, varied the abacus and echinus, and added a dentil course to the cornice. The columns were less sturdy and flutes were sometimes omitted. The architrave does not project beyond the face of the column, but is in the same plane with it, and the triglyphs in the frieze were over the central axes of the columns, even at the angles.

The channels in triglyphs are rectangular at the top.

The mutules, usually over the triglyph only, are but slightly inclined, and do not project below the soffit.

The ***Ionic Order*** (p. 116 D) of the Romans was less refined. Some late examples, such as those at Pompeii and the Temple of Saturn, have angle volutes, thus showing the scroll on all four sides (p. 143 G, J).

The ***Corinthian Order*** (p. 116 F) was the favourite of the Romans, and was used in the largest temples, as those of Castor and Pollux (p. 147) and Vespasian, Rome. The capital is very ornate and

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dates from B.C. 430. The Order appears to have been used principally in small buildings, such as the Monument of Lysicrates and the Tower of the Winds, Athens (pp. 105 J, 106). The Olympieion, Athens, may be considered a Roman building or rather a Greek design mainly carried out by Roman craftsmen (p. 111). The acanthus leaves surrounding the " bell " of the capital were of the prickly acanthus type (*Acanthus spinosus*) having pointed leaves of V-shaped section (p. 105 D). Shafts of columns were fluted, as described at the commencement of this section.

The ***Composite Order*** was unknown to the Greeks, but a somewhat similar treatment is seen in the carved anthemion ornament on the necking of the capitals in the Erechtheion.

F. **Mouldings** (pp. 119, 120).—The Greeks relied for effect on the graceful contour of their mouldings, which approach conic sections in profile and are often decorated with carving of so delicate a character as not to obscure but enhance the grace of the outlines. Executed in fine marble, mouldings were often undercut so as to produce a fretted effect.

Greek dentils are far apart and occupy the whole depth of the moulding.

Greek consoles were used only as vertical brackets to door cornices, as in the Erechtheion (p. 115 E).

G. **Ornament** (pp. 123, 124, 125).—The sculpture of the Greeks has never been equalled, whether executed in isolated groups of statuary or within the boundaries of an architectural framing, as in the pediments, metopes, and friezes of the Parthenon. It is generally held that exteriors of temples were coloured on a carefully prepared fine cement or marble surface, and this must have added greatly to the general effect. Polygnotus and other great artists were employed for decorative painting upon temples and other buildings, and part of the Propylæa was known as the Painted Loggia. The early frescoes were probably in the style of the vase paintings of that period, while the later,

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the leaves surrounding the " bell " are often naturalistic and derived from the leaves of the *Acanthus mollis*, which are blunt-ended and flat in section (p. 105 E), or from the olive leaf, as in the Temple of Castor and Pollux. The entablature is rich in carved ornament (p. 872); the architrave has many decorated mouldings; the frieze is frequently carved with acanthus scroll or figure ornaments, while the cornice has carved mouldings, surmounted by modillions (consoles, brackets, or corbels) which give an apparent support to the corona and have sculptured coffers between them. Shafts of columns were fluted or plain.

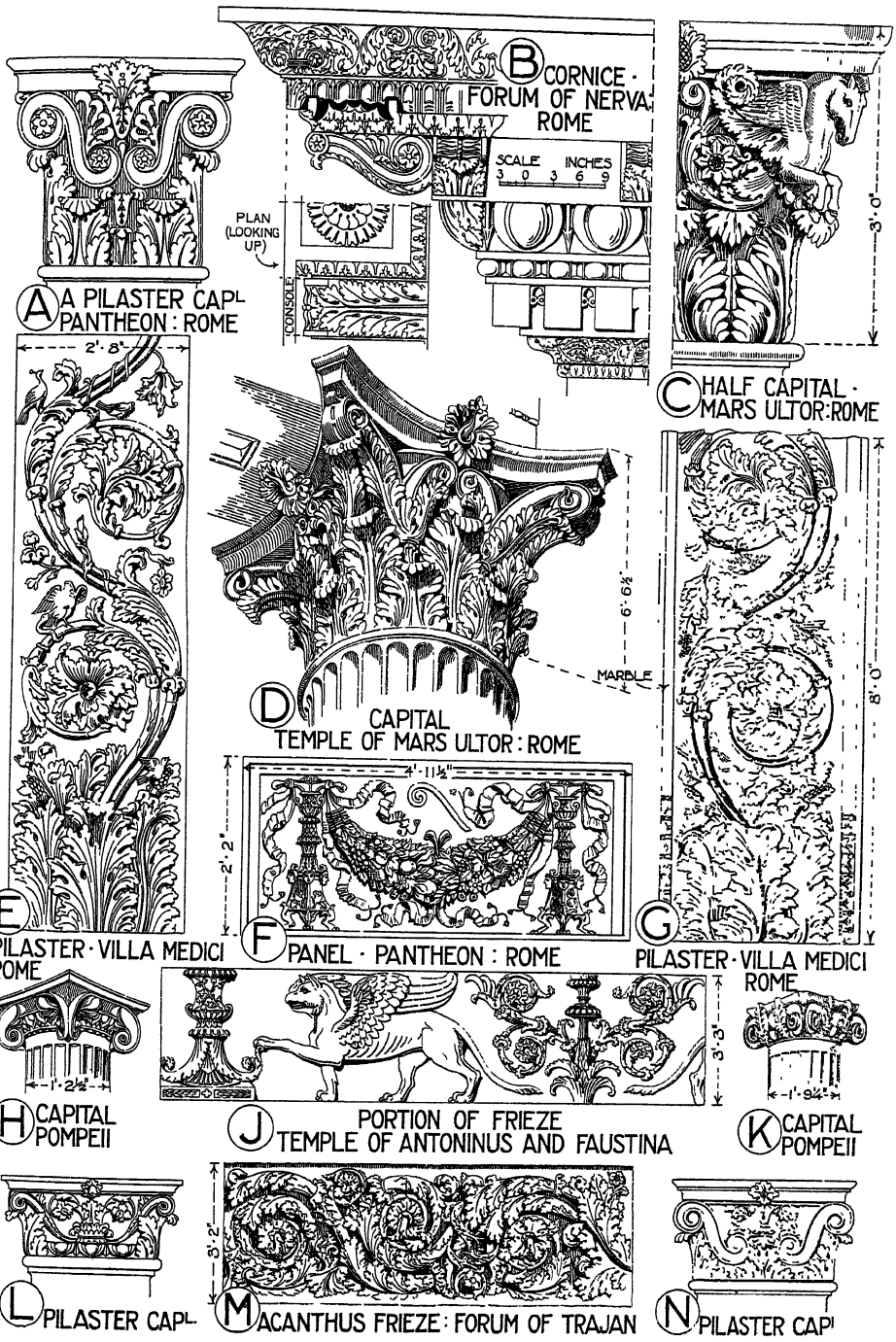
The ***Composite Order*** (pp. 133, 178 G, 181 G), invented by the Romans, was used in Triumphal Arches, and the entablature follows the Corinthian Order.

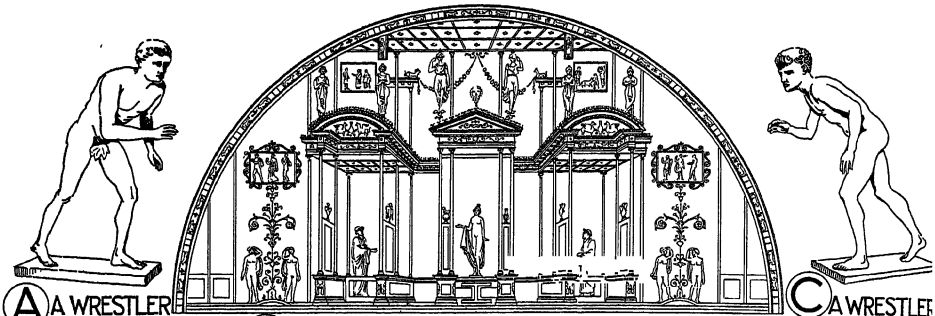
F. **Mouldings** (pp. 119, 120).—The Romans on the contrary relied for effect on the abundant carving on their mouldings rather than on the contours, which are usually parts of circles in profile. Ostentation replaces refinement, and when every moulding is covered with carving a wealth of surface decoration is produced though often coarse in workmanship, which is sometimes due to the stone employed.

Roman dentils are close together, and finished with a fillet below.

Roman consoles were used also horizontally in cornices (p. 147 C) and vertically as keystones (p. 178 A).

G. **Ornament** (pp. 193, 194, 197).—The Romans recognised the pre-eminence of the Greeks in sculpture or painting, and so Greek artists were employed and Greek sculpture was prized and copied. In later times both vaults and floors were covered with mosaic, often very coarse in treatment. In the marble wall-facings and floors good effects were produced, as the Romans were connoisseurs in the use of marble. The ox-heads connected by garlands, so frequently carved in Roman friezes, originated in the actual skulls and garlands hung on the altars after the beasts themselves had been slain. A fine marble cement was frequently used as a covering to walls and stone columns,

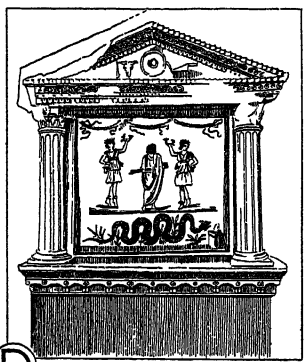

A A PILASTER CAPL PANTHEON : ROME
B CORNICE · FORUM OF NERVA ROME
SCALE INCHES 3 0 3 6 9
PLAN (LOOKING UP)
CONSOLE
C HALF CAPITAL · MARS ULTOR: ROME
3'·0"
2'·8"
D CAPITAL TEMPLE OF MARS ULTOR : ROME
6'·6½"
MARBLE
E PILASTER · VILLA MEDICI ROME
F PANEL · PANTHEON : ROME
4'·11½"
2'·2"
G PILASTER · VILLA MEDICI ROME
8'·0"
H CAPITAL POMPEII
1'·2½"
J PORTION OF FRIEZE TEMPLE OF ANTONINUS AND FAUSTINA
3'·3"
K CAPITAL POMPEII
1'·9¼"
L PILASTER CAPL
M ACANTHUS FRIEZE : FORUM OF TRAJAN
3'·2"
N PILASTER CAPI



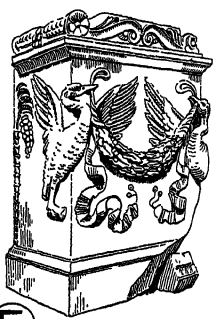
A A WRESTLER HERCULANEUM

B FRESCO · THERMÆ OF TITUS : ROME

C A WRESTLER HERCULANEUM



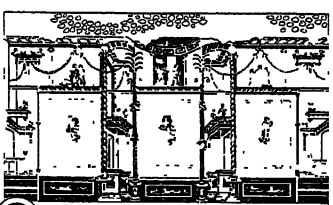
D WALL FRESCO : POMPEII



E AN ALTAR : ARLES



F WALL FRESCO : POMPEII



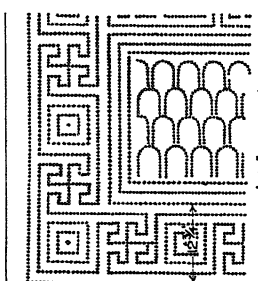
G WALL FRESCO : POMPEII



H MOSAIC PAVING : POMPEII



J TABLE SUPPORTS : POMPEII



K POMPEIAN MOSAIC PAVING



L POMPEIAN MOSAIC: NAPLES MUSEUM



M POMPEIAN MOSAIC

GREEK	ROMAN
if judged from the provincial imitations at Pompeii, must have been grand and decorative. See " Comparative Analysis " under Greek Architecture (p. 127).	to form a ground on which paintings could be executed, as at Pompeii. The frescoes on the walls of the Roman Thermæ largely influenced the fresco decorations of the Renaissance period (p. 194 B).
The Anthemion or Honeysuckle was the characteristic motif of Greek surface ornament and also of cyma recta mouldings (pp. 124 D, 125 A).	The Acanthus scroll, boldly carved with continuous stem and spirals, is specially characteristic of Roman ornament and friezes (p. 193 M).
The Greeks, consciously or unconsciously, practised extreme simplicity in art, and the fine-grained marble that they worked encouraged the tendency to leave purity of outline to speak for itself. Thus, whether on the grand scale of a temple building like the Parthenon or in the single human figure as the Hermes of Olympia, they were content with beauty unadorned by distracting ornament.	The Romans never seem to have been satisfied till they had loaded their monumental buildings with every possible ornamental addition. Here too again the influence of material is apparent; for concrete demanded a disguise, and coarse limestone did not permit of delicate purity of line and thus called for extraneous ornament, so the Romans completed the magnificence of their monuments by a wealth of decoration.
The perfection of Greek art lies in its simplicity. The Greeks were artists by nature, and Greek art was the outward expression of the national love of beauty.	The characteristic of Roman art lies in its forcefulness. The Romans were rulers by nature, and Roman art was the outward expression of the national love of power.

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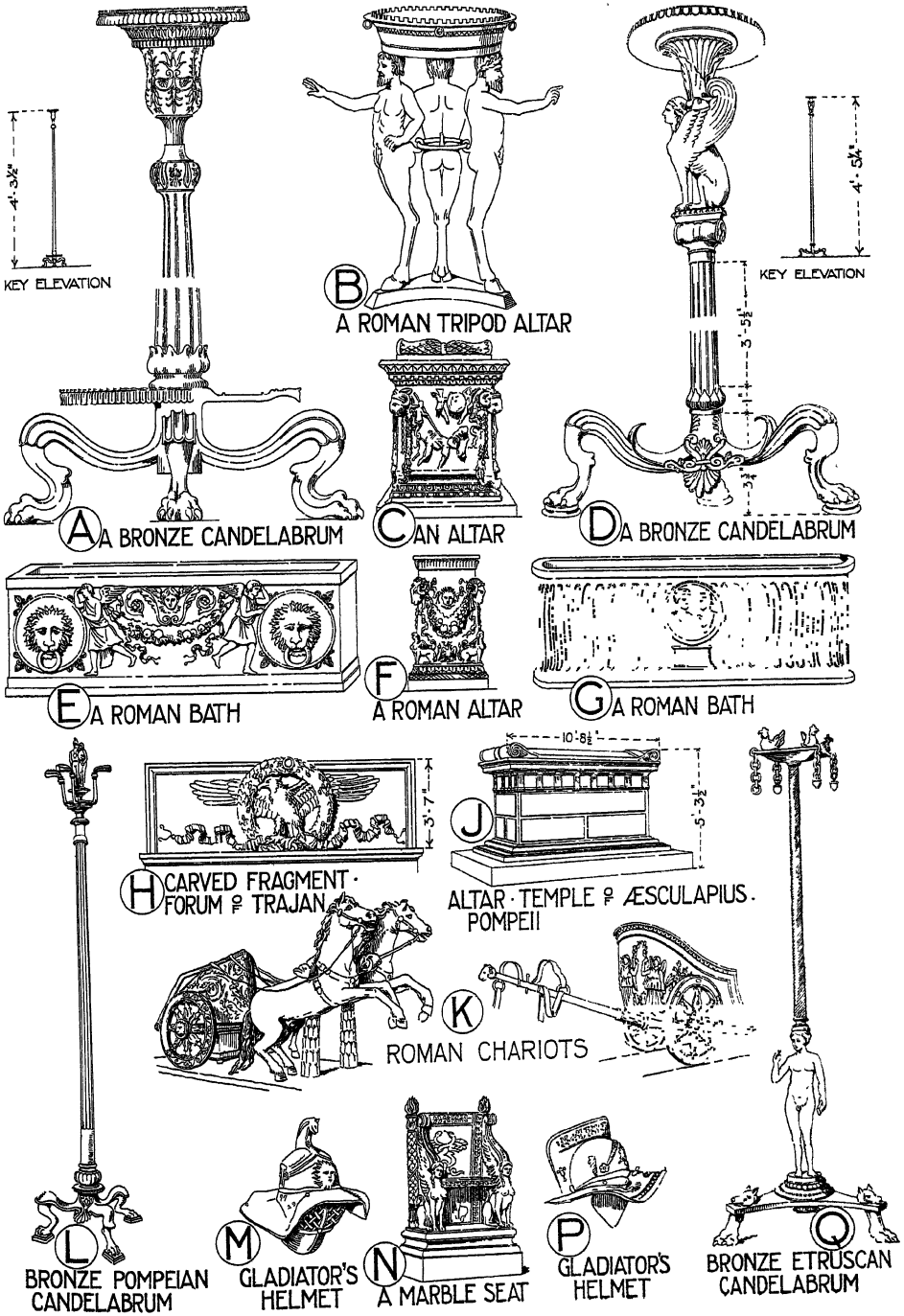
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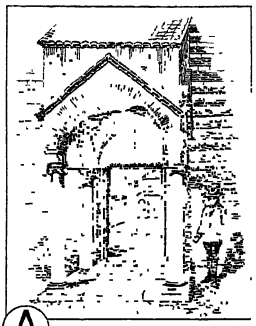
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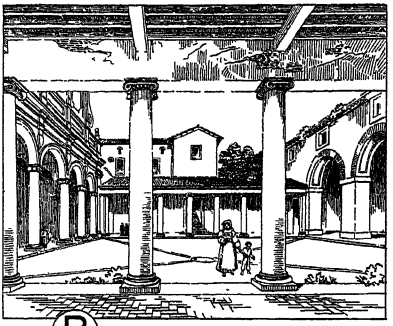
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4'-3½"
KEY ELEVATION
A A BRONZE CANDELABRUM
B A ROMAN TRIPOD ALTAR
C AN ALTAR
4'-5¼"
KEY ELEVATION
3'-5½"
1'-1"
3¼"
D A BRONZE CANDELABRUM
E A ROMAN BATH
F A ROMAN ALTAR
G A ROMAN BATH
3'-7"
H CARVED FRAGMENT · FORUM OF TRAJAN
10'-8½"
5'-3½"
J ALTAR · TEMPLE OF ÆSCULAPIUS · POMPEII
K ROMAN CHARIOTS
L BRONZE POMPEIAN CANDELABRUM
M GLADIATOR'S HELMET
N A MARBLE SEAT
P GLADIATOR'S HELMET
Q BRONZE ETRUSCAN CANDELABRUM

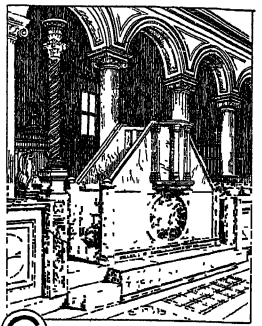
S. CLEMENTE : ROME



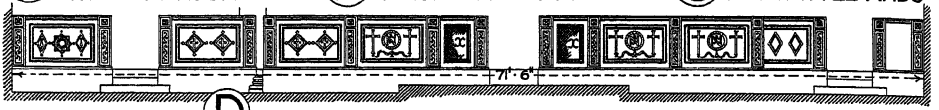
A PORCH TO ATRIUM



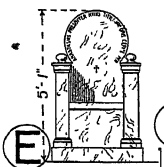
B ATRIUM LOOKING N.



C THE EPISTLE AMBO



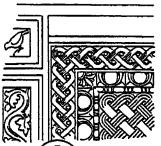
D BALUSTRADE BETWEEN CHOIR AND SANCTUARY



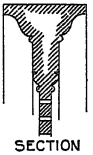
E BISHOP'S SEAT

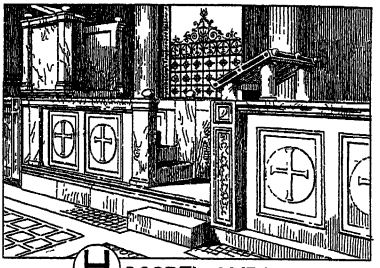


F CAPL OF CANDELABRUM

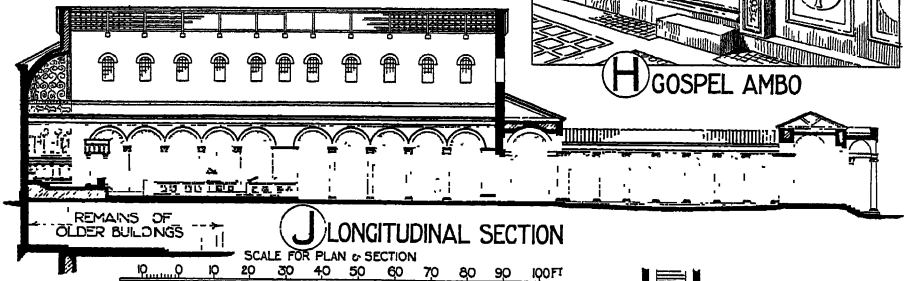


G PANEL AT x





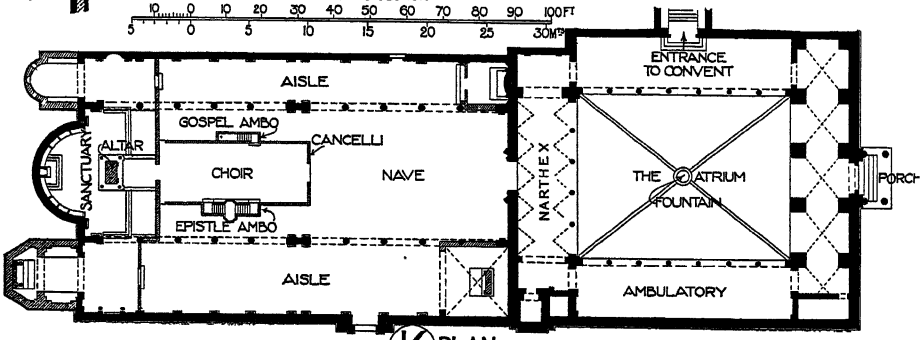
H GOSPEL AMBO



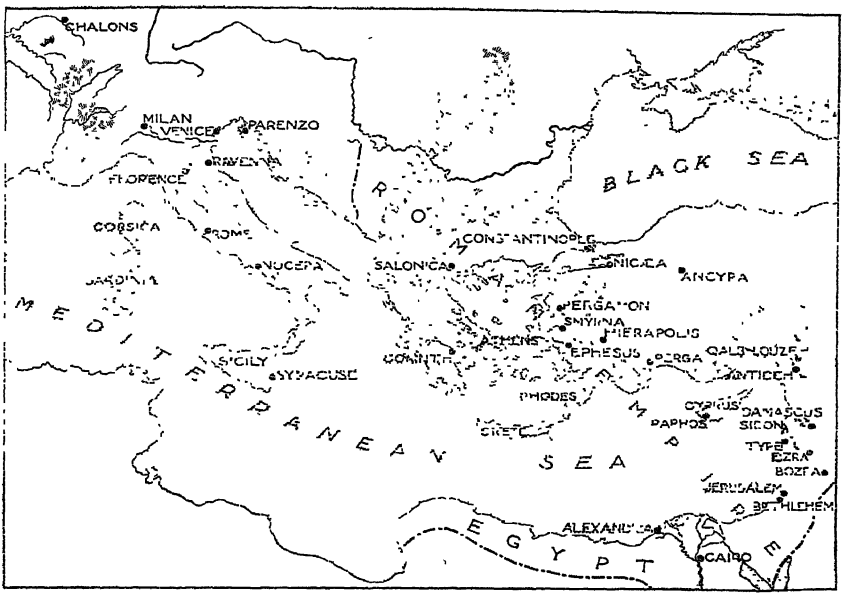
J LONGITUDINAL SECTION

SCALE FOR PLAN & SECTION

10 0 10 20 30 40 50 60 70 80 90 100FT
5 0 5 10 15 20 25 30M



K PLAN



THE EARLY CHRISTIAN PERIOD

EARLY CHRISTIAN ARCHITECTURE

1. INFLUENCES

i. Geographical.—Christianity had its birth in Judæa, an eastern province of the Roman Empire, but directly it became a living organism it was naturally carried by S. Peter, S. Paul, and other missionaries to Rome, as the centre of the World-Empire. There at the fountain-head of power and influence, and in spite of opposition and persecution, the new religion took root and grew, till it was strong enough to become the recognised universal religion of the whole Roman Empire. Early Christian architecture at Rome was influenced by, and was the logical outcome of, existing Roman art, and it was modified in other parts of the Empire according to the type already recognised as suitable for the geographical situation of those countries, such as Syria, Asia Minor, North Africa, and Egypt.

ii. Geological.—Geological influences may be said to have acted indirectly rather than directly on Early Christian architecture, for the ruins of Roman buildings often provided the quarry whence materials were obtained. This influenced the style, both as regards construction and decoration; for columns and other architectural features, as well as fine sculptures and mosaics from older buildings, were worked into basilican churches of the new faith.

iii. Climatic.—The climate of Italy, the most important centre of building activity in this epoch, has been dealt with in the chapter on Roman architecture (p. 130). The climatic conditions of such Roman provinces as Egypt,

point of view, Early Christian buildings hardly have the architectural value of a style produced by the solution of constructive problems. Basilican churches had either closely spaced columns carrying the entablature (p. 205 B), or more widely spaced columns carrying semicircular arches (p. 205 A). The basilican church with three or five aisles, covered by a simple timber roof, is typical of the Early Christian style (p. 211 A) as opposed to the vaulted Byzantine church with its central circular dome placed over a square by means of pendentives and surrounded by smaller domes (p. 227).

The architectural character of basilican churches is rendered impressive and dignified by the long perspective of oft-repeated columns which carry the eye along to the sanctuary; a treatment which, combined with the comparatively low height of interiors, makes these churches appear longer than they really are, as is seen in S. Paolo fuori le Mura (pp. 206 F, 209 B), and S. Maria Maggiore (p. 205 B). An "arch of triumph" gave entrance to the sanctuary with the High Altar in the centre standing free under its baldachino upheld by marble columns. The vista was rounded off by an apse lined with marble slabs and crowned with a semi-dome encrusted with glittering golden mosaics in which Christ appears surrounded by prophets, saints, and martyrs (pp. 205 A, 211).

3. EXAMPLES

BASILICAN CHURCHES

Basilicas or Roman halls of justice probably served the Early Christians as models for their churches, which thus form a connecting link between buildings of pagan Classic times and those of the Romanesque period which followed. The term "basilica" (Gk. *basilikos* = kingly), which was applied to a Christian church as early as the fourth century, was a peculiarly appropriate designation for buildings dedicated to the service of the King of Kings. Some authorities, however, believe Early Christian churches to have been evolved from Roman dwelling-houses, where the community had been in the habit of assembling, or from the "scholæ" or lecture-rooms of the philosophers. A basilican church was usually erected over the burial-place of the saint to whom the church was dedicated, and immediately over this burial-place, crypt, or "confessio" was the High Altar covered by a ciborium, also known as a tabernacle or baldachino (p. 862). There were thirty-one basilican churches in Rome alone.

S. Clemente, Rome (A.D. 1084–1108) (pp. 198, 205 A), rebuilt over an earlier church, retains the original internal arrangement as well as fittings of the fifth century and shows the suitability of the basilican plan for Christian ritual and for sheltering a number of worshippers (p. 198 K). An atrium or open rectangular forecourt (p. 198 B), surrounded by arcades, forms an imposing approach to the church, and in the centre is a fountain of water for ablutions—a custom which is still symbolised amongst Roman Catholics by the use of the stoup of holy water at the entrance of the church. Next came the covered narthex, between the atrium and the church, which was assigned to penitents. The narthex opened into the nave, lighted by a clear-story of small windows, with an aisle on either side, usually half the width of the nave. Occasionally there are two aisles on each side of the nave, as in the Basilicas of Old S. Peter (p. 206 B, C), S. Paolo (pp. 206 E, F,

209 B), and S. Giovanni in Laterano, Rome. Galleries for women were sometimes placed over the aisles, as at S. Agnese (p. 210 A, C, D, E) and S. Lorenzo, Rome, but otherwise the sexes sat on opposite sides of the nave. There is no "bema" (Gk. platform) in S. Clemente, but one had existed in some pagan basilicas, and was the germ of the Mediæval transept which later converted the plan into a Latin cross. Some consider, however, that this cruciform plan was derived from buildings which had been erected for sepulchral purposes as early as the age of Constantine. A choir, which became necessary owing to the growth of ritual, was enclosed by low screen walls or "cancelli" (hence "chancel") and was provided with an "ambo" or pulpit on either side, dating from the fourth century, from which the Gospel and Epistle were read (p. 205 A). In the semicircular apse or sanctuary the bishop took the central place, which had been that of the "prætor" in the Roman basilica, and the presbyters, or members of the Church Council, occupied seats on either side corresponding to those used by the Roman "assessors." The altar, in front of the apse, which in the basilica had been used for libations or sacrifices to the gods, was now adapted for the celebration of Christian rites, and a baldachino or canopy, supported on marble columns, was erected over it. The interior of S. Clemente, as of other churches, owes much of its rich effect to the use of glass mosaic ("opus Grecanicum") in the semi-dome of the apse (p. 205 A), which contains a central figure of Christ in glory against a golden background, or as at S. Agnese (p. 217 A) or S. Maria Maggiore (p. 217 B).

> "Below was all mosaic choicely planned,
> With cycles of the human tale."

The timber roofs were plainly treated with visible rafters (pp. 210 A, 211 A) often cased, in Renaissance times, with richly gilded coffers (pp. 205 A, B, 209 B). The pavement was formed from the abundant store of old marbles in Rome, and slices of columns were laid as centres to surrounding bands of inlay in intricate geometric patterns (p. 205 A) as at S. Lorenzo (p. 217 Q) and SS. Giovanni e Paolo (p. 217 T).

The **Basilican Church of S. Peter, Rome** (A.D. 330) (p. 206 A, B, C), erected by Constantine near the site of the martyrdom of S. Peter in the circus of Nero, was pulled down to make way for the present cathedral (p. 582). The atrium led through the narthex to the great nave with double aisles terminating in five arches, the central of which was called the Arch of Triumph (p. 206 B, C). Beyond was the bema (p. 862) and the sanctuary or semicircular apse with the Pope's seat against the centre of the wall. The priest, as in all Early Christian basilican churches, stood behind the altar and faced east, as the chancel was in this case at the west end of the church (p. 206 C).

S. Giovanni in Laterano, Rome (A.D. 330) (p. 34 B), has been so much altered at various times as to have lost its original Early Christian character.

S. Paolo fuori le Mura, Rome (pp. 206 D, E, F, G, 209, 217 G), founded in A.D. 380, was destroyed in A.D. 1823, but was rebuilt on the original design, and is the largest and most impressive of all basilican churches. The nave has eighty great columns of Simplon granite, with mosaic mural medallions of the Popes above. The Arch of Triumph with fifth-century mosaics, the double bema, the apse with mosaics of the thirteenth century, and the remarkable High Altar with its double baldachino over the Confessio of S. Paul, all contribute to the grandeur of the interior.

S. Maria Maggiore, Rome (A.D. 432) (pp. 205 B, 217 B), was built by Pope Sixtus III and is the only church of which there is evidence that it was originally a pagan basilica, and it is one of the most typical of basilican churches. The interior (p. 205 B) is the most beautiful of the three-aisled basilicas, with its ranges of Ionic columns of Hymettian marble and entablature surmounted by the original mosaics of Sixtus III dealing with Old Testament history, culminating in the Arch of Triumph, High Altar, and baldachino, beneath which is the confessio.

S. Lorenzo fuori le Mura, Rome, is remarkable as being the product of two churches with their apses placed back to back, as in the pagan temple of Venus at Rome. The two churches, of which one was founded in A.D. 432 and the other rebuilt in A.D. 578, were amalgamated in A.D. 1216 by the removal of the apses.

S. Sabina, Rome (A.D. 425) (p. 211 A), although often altered, retains its original character. The basilican plan has nave and aisles separated by twenty-four Corinthian columns of Hymettian marble supporting semi-circular arches, plain clear-story walls, and a simple open timber roof. The bareness of the interior is relieved by the eleventh-century baldachino and High Altar, and the mosaics of the apse.

S. Stefano Rotondo, Rome (A.D. 470) (p. 215 A, B, C, D), has a circular plan of similar type, 210 ft. in diameter, and is the largest circular church in existence. Its high central and lower aisle roofs are supported by two rings of columns from older buildings ; the outer range supports arches and the inner a horizontal architrave. Two central columns and a cross wall give additional support to the main roof timbers. The suggested restoration (p. 215 B) shows a possible original arrangement.

S. Apollinare Nuovo, Ravenna (A.D. 493–525), was erected by Theodoric the Great and has many points of resemblance to its neighbour, S. Apollinare in Classe, especially in the remarkable campanile and world-famous band of mosaics above the nave arcade.

S. Apollinare in Classe, Ravenna (A.D. 534–539) (pp. 210, 211 B, 217 E, H, J), was erected by Theodoric the Great on the site of a Temple of Apollo and, like the sister church S. Apollinare Nuovo, was probably built by Byzantine craftsmen, for here the influence of Constantinople was strong. The simple plan forms a three-aisled basilican church, 150 ft. long and 98 ft. wide. The atrium has disappeared, but a narthex leads into the church. The eastern apse, which is circular internally and polygonal externally, is raised above the crypt and contains the High Altar with ciborium. On the north is one of the earliest circular campanili, of the same date. The interior is impressive with nave arcade of cipollino columns, Byzantine capitals, and dosseret blocks (p. 217 E, J) supporting arches, above which is the band, 5 ft. high, of portraits of bishops of Ravenna, while the apse retains its original mosaics showing the saint preaching to his flock.

S. Agnese fuori le Mura, Rome (A.D. 625–638) (pp. 210, 217 A), was founded by Constantine in A.D. 324 over the tomb of S. Agnese. It shares with S. Lorenzo fuori le Mura the peculiarity of having aisles in two storeys. Between nave and aisles are sixteen ancient columns supporting arches, with smaller gallery columns above. The apse with altar and baldachino is at the western end, and mosaics in the semi-dome (A.D. 1525) represent S. Agnese between two Popes (p. 217 A). The exterior, with simple clear-story windows, is plain and the apse is flanked by a campanile (A.D. 776).

Torcello Cathedral, near Venice (rebuilt A.D. 1008), still has the founda-

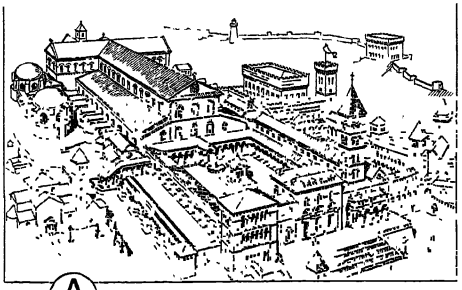


A. The Basilican Church of S. Clemente, Rome



B. The Basilican Church of S. Maria Maggiore, Rome

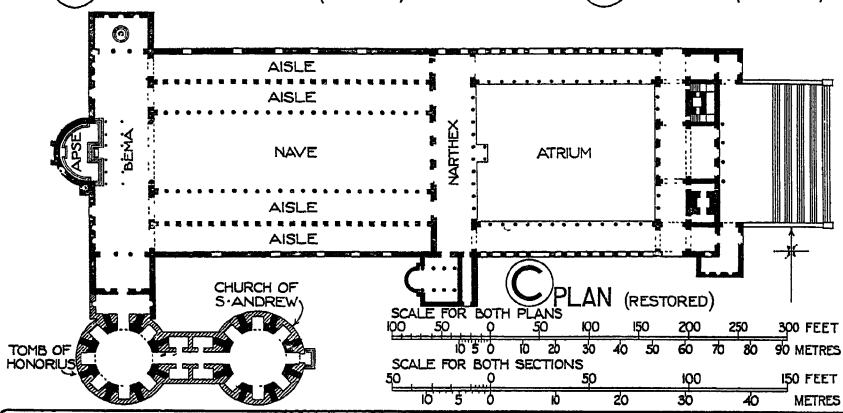
BASILICAN CHURCH of S. PETER : ROME



A EXTERIOR FROM S.E. (RESTORED)

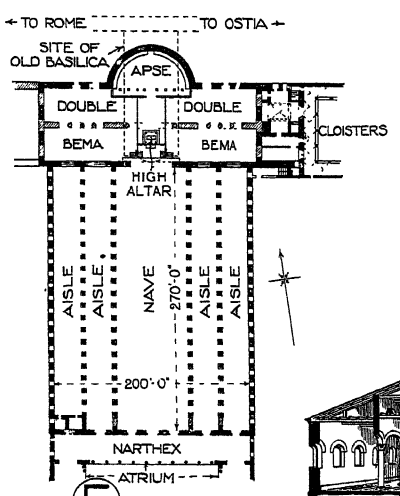


B INTERIOR (RESTORED)

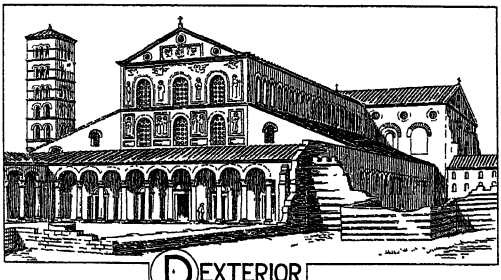


C PLAN (RESTORED)

S. PAOLO FUORI LE MURA : ROME



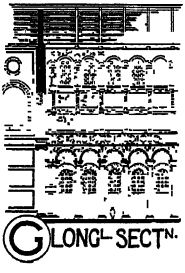
E PLAN



D EXTERIOR FROM S.



F INTERIOR (RESTORED)



G LONG^L SECT^N.

tions of the original bishop's throne flanked by six rising rows of seats in the apse, which give a good idea of early Christian arrangements; while the towering mass of the campanile with the octagonal baptistery of S. Fosca (p. 236) complete this historic group.

Syracuse Cathedral, Sicily, still clearly shows how a pagan temple of Athena (p. 84) was converted in A.D. 640 into a Christian church, by the construction of a wall between its peristyle columns and by the formation of openings in its cella walls.

The **Church of the Nativity, Bethlehem** (A.D. 330) (p. 212 A, B, C, D), founded by Constantine over the traditional birthplace of Christ, stands foremost among a number of basilican churches in Palestine and Syria erected between the third and seventh centuries, before the Saracen hordes overran the country. It is surrounded by a high wall which encloses the precincts of the Latins, Greeks, and Armenians, who jointly own the church. This historic building, with the monolithic Corinthian columns, 19 ft. high, of the nave and double aisles, and the three apses of the sanctuary, is still, in spite of restorations, grand in its simplicity of plan and must have been peculiarly suitable to receive the immense number of worshippers at the birth-shrine of the Founder of Christianity.

The **Church of the Holy Sepulchre, Jerusalem** (p. 212 E, F, G), erected by Constantine over the reputed tomb of Christ, defaced and damaged by the Saracens and Persians, rebuilt by Crusaders and often restored, appears to date from the twelfth century, for its architecture resembles that of Sicily in that period. The entrance (A.D. 1140) (p. 212 E) leads into the transept, to the left of which is the rotunda, rebuilt in the eleventh century, with the Holy Sepulchre itself, reconstructed in recent times; while on the right is the church of the Crusaders. This circular type was copied at S. Gereon, Cologne, Little Maplestead, Essex, S. Sepulchre, Cambridge, and the Temple Church, London (p. 320), and also at Aix-la-Chapelle for the tomb of Charlemagne (p. 231 E, F, G). A model of the Church of the Holy Sepulchre before its partial destruction in A.D. 1808 is in the Bodleian Library, Oxford.

The **Church at Qalb Louzeh** (A.D. sixth century) (p. 212), in Syria, has a basilican plan with entrance flanked by two towers, and nave separated by piers carrying semicircular arches. Above are corbels supporting short columns to carry the roof trusses. The church exhibits many points common to all Syrian churches, which broke away from the Roman type owing to distance from the Capital.

S. John of the Studion, Constantinople (A.D. 463), which was attached to a monastery, is the oldest existing church of the basilican type of all those erected by Constantine in that city.

S. George, Salonica (A.D. 400), an early domed church, and **S. Demetrius, Salonica** (A.D. 500–550), a five-aisled basilican church with transepts and galleries, show the variety of treatment during this period.

In Asia Minor, as at Ancyra, Pergamon, and Hierapolis; in North Africa as at Algiers; and also in Egypt, where the early Christians were known as Copts, there are a number of basilican churches of the period, but here the style died out owing to the Saracen Conquest in the seventh century.

BAPTISTERIES

Early Christian baptisteries were originally used only for the sacrament of baptism, and for this rite Roman circular temples and tombs (pp. 146, 169)

supplied a most suitable type of building. There was generally only one baptistery in a city, as at Rome, Ravenna, and Florence, and as the rite was administered only at the three great Christian festivals—Easter, Pentecost, and the Epiphany—these buildings had to be of considerable size, and until the end of the sixth century of our era they usually adjoined the atrium or forecourt of the church, but after this period the baptistery was replaced by a font in the church vestibule. The Early Christians sometimes modified circular Roman temples or tombs to meet their own requirements, which often necessitated an enlarged space. It was difficult to cover this increased area with one roof supported only by outside walls, and therefore, while the Romans had used internal columns attached to the walls in a decorative way, the Early Christians used columns constructively to support the central roof, and surrounded the whole with a one-storeyed aisle enclosed by an outer wall, which supported a lower roof (p. 215 F, G, H, J).

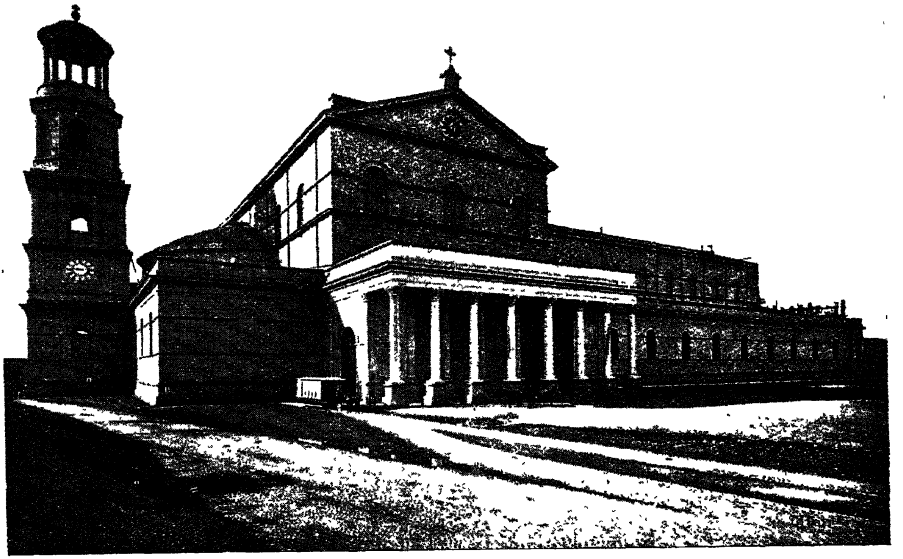
The **Baptistery of Constantine, Rome** (A.D. 430–440) (p. 215 E, F, G), built near the Lateran Church by Sixtus III, and not by Constantine to whom it is generally attributed, is among the oldest of Italian baptisteries, of which it was probably the model. It is octagonal and the roof is supported by a two-storeyed ring of eight porphyry and marble columns taken from old pagan buildings, while in the centre is an old Roman bath of green basalt converted into a font.

The **Baptistery, Nocera** (A.D. 350) (p. 215 H, J), 80 ft. in diameter, with a ring of thirty antique columns in pairs, appears to be the first instance of the combination of an internal dome covered by a wooden roof externally; for Roman architects had previously allowed the vault to show externally, as in the Pantheon. This treatment is similar to the practice of Gothic architects, who covered the thin stone vaults of their churches with protecting timber roofs (p. 301 C, F).

The **Baptistery, Ravenna,** founded at the end of the fourth century for the Orthodox community, is octagonal with two internal wall arcades one above the other, similarly placed to the superimposed columns in the temple, Spalato (p. 150). The upper arcade is subdivided into triple arches under each main arch, the earliest example of a treatment which became so usual in the Romanesque period (p. 411). The dome, constructed of hollow tiles, has fine fifth-century mosaics representing the Baptism of Christ.

TOMBS

Early Christian burial up to the end of the fourth century of the Christian era took place in the Catacombs outside Rome, for burial within the city was prohibited by law. These tombs, cut in the tufa formation, followed the old Roman type, except that, as the Christian church did not then allow cremation, "loculi" or wall recesses were formed to receive the bodies. These immense subterranean vaults or cities of the dead, with their winding corridors and mortuary chapels all dug out of the earth, are in no sense architectural, but at once occur to the mind when tombs in Rome are under discussion. At the commencement of the fifth century the first cemetery inside the walls of Rome appears to have been made, and about the middle of the seventh century burial within the city boundaries became customary, for the enforcement of the old law against intra-mural burial was no longer considered necessary, owing to the decreased population. Architecture was, however, still used for monumental tombs which were at once an expression of the Christian faith in immortality and a memorial to the dead.

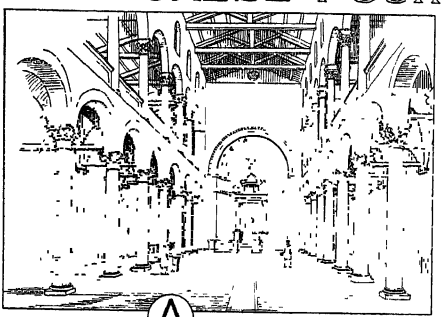


A. The Basilican Church of S. Paolo fuori le Mura, Rome

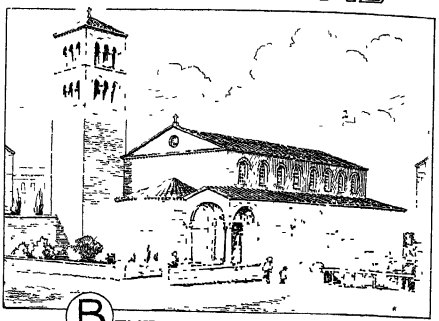


B. The Basilican Church of S. Paolo fuori le Mura, Rome

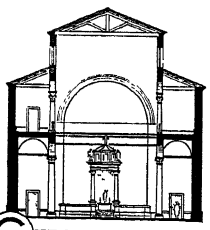
S. AGNESE FUORI LE MURA: ROME



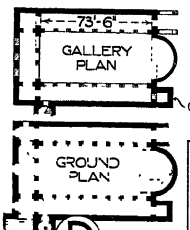
A INTERIOR



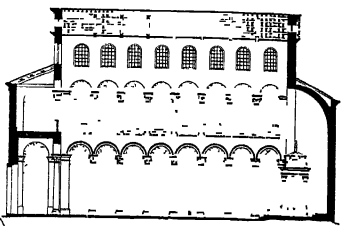
B EXTERIOR FROM S.W.



C TRANSVRSE SECTN.



D PLANS

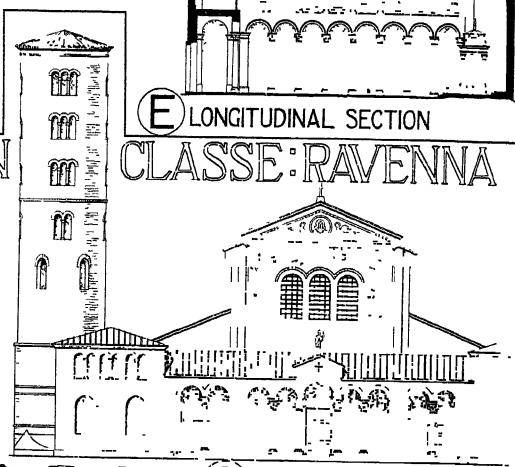


E LONGITUDINAL SECTION

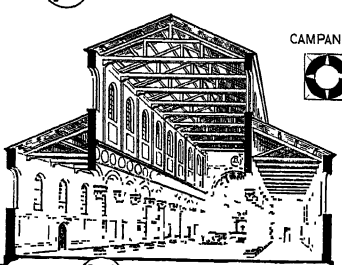
S. APOLLINARE IN CLASSE: RAVENNA



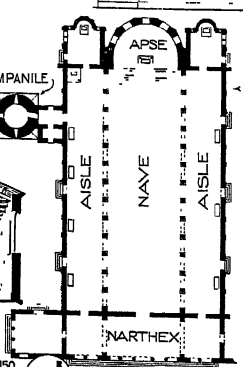
F EXTERIOR FROM N.E.



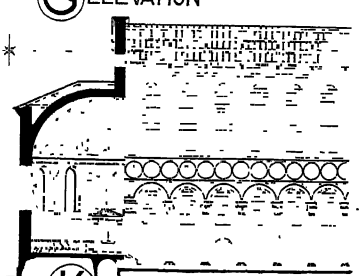
G ELEVATION



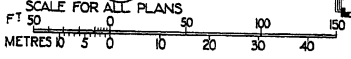
H INTERIOR

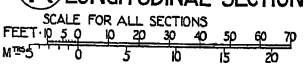


J PLAN



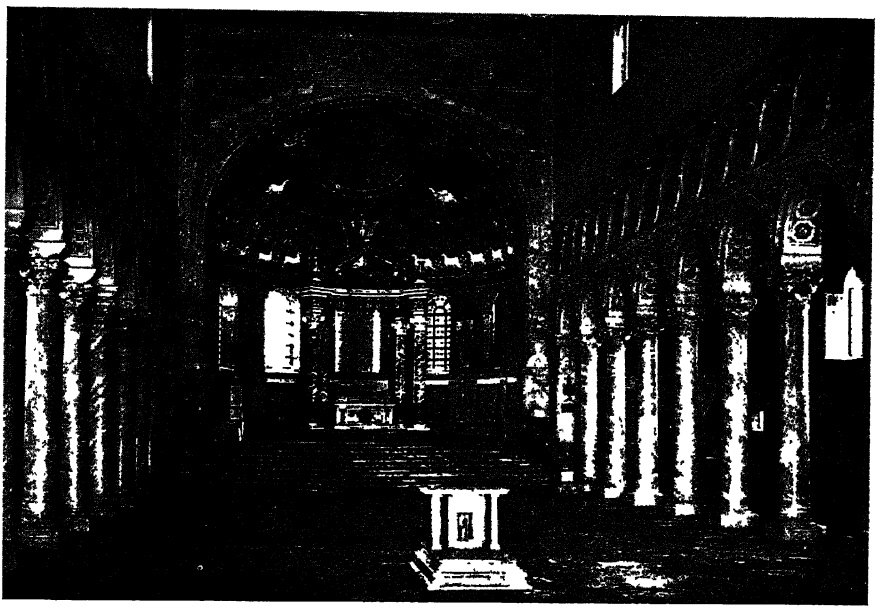
K LONGITUDINAL SECTION





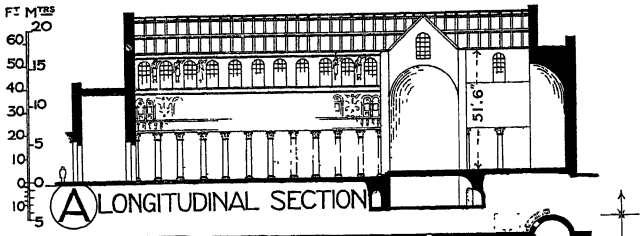


A. The Basilican Church of S. Sabina, Rome



B. The Basilican Church of S. Apollinare in Classe, Ravenna

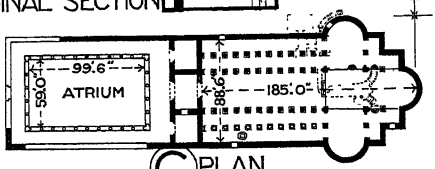
CHURCH OF THE NATIVITY: BETHLEHEM



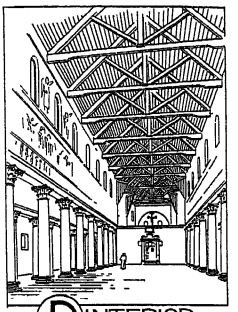
A LONGITUDINAL SECTION



B SKETCH FROM N.E.

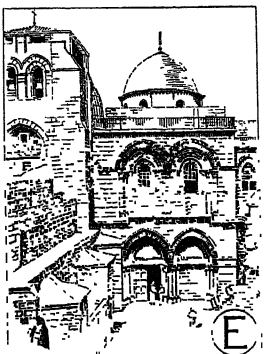


C PLAN

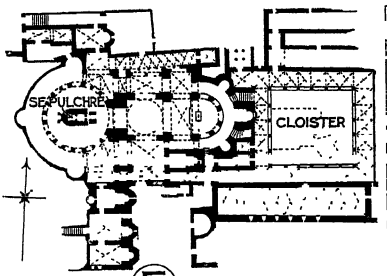


D INTERIOR

CHURCH OF THE HOLY SEPULCHRE: JERUSALEM

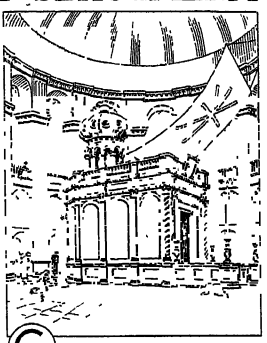


E PRINCIPAL ENTRANCE



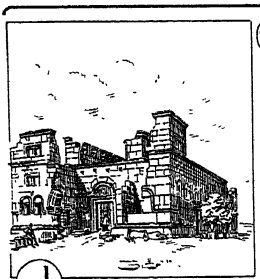
F PLAN

50 0 50 100 150 200 FEET
10 0 10 20 30 40 50 60 METRES

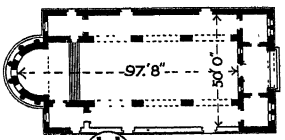


G INTERIOR SHOWING SEPULCHRE

CHURCH AT QALB LOUZEH



J EXTERIOR



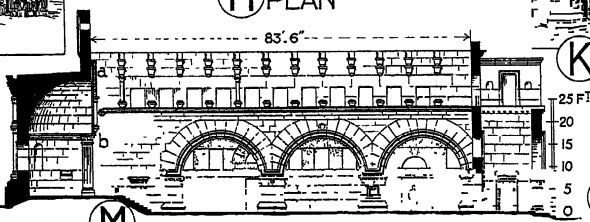
H PLAN



K INTERIOR (RESTORED)



L ARCH-MOULD at a



M LONGITUDINAL SECTION



N CAP AT b

S. Costanza, Rome (A.D. 330) (p. 216 A, B, C, D, E), erected by Constantine for his daughter, was converted into a church in A.D. 1256. The entrance leads to the central space, 40 ft. in diameter, encircled by twelve pairs of coupled granite columns which support the dome, and it has a surrounding aisle covered with a barrel vault, ornamented with mosaics of the fourth century representing the vintage.

The **Tomb of Galla Placidia, Ravenna** (A.D. 420) (p. 216 F, G, H, J, 239 B), appears to be the earliest building which is cruciform in plan, and is extremely interesting as the sarcophagi still remain in their original positions in the arms of the cross. It is 39 ft. by 33 ft. internally, and the crossing is covered by an unusual dome in which both dome and pendentives are portions of the same hemisphere (p. 223 B, C). The walls are lined with marble slabs, and the dome and vaults still retain the ancient coloured mosaics.

The **Tomb of Theodoric, Ravenna** (A.D. 530) (p. 216 K, L, M), is in two storeys, of which the lower, a decagon externally 45 ft. in diameter, encloses a cruciform crypt, while the upper storey is circular internally and has traces of an external arcade. The extraordinary roof is formed of one huge slab of stone weighing 470 tons and hollowed into a flattish dome, 35 ft. in diameter, on which stone handles are formed for hoisting it into position. The ashes of the founder were deposited in an urn above the dome.

4. COMPARATIVE ANALYSIS

A. **Plans.**—The Early Christians followed the basilican model for their new churches (pp. 198, 206) and may also have used old Roman halls, baths, dwelling-houses, and even pagan temples as places of worship. The campanile or bell-tower dates from this period, and that of S. Giorgio in Velabro, Rome, one of the earliest, is a prototype of Mediæval towers. An isolated circular baptistery was generally attached to the chief basilican church or cathedral of a city.

B. **Walls.**—These were still constructed according to Roman methods of using rubble or concrete, faced with plaster, brick, or stone (p. 210 B). Mosaic decoration was added internally (p. 211), and sometimes also externally on west façades; though little regard was paid to external architectural effect (p. 209).

C. **Openings.**—Arcades, doors, and windows were either spanned by a semicircular arch which, in nave arcades, often rested directly on the capitals without any entablatures (pp. 209, 211, 217 E), or were spanned by a lintel, as in the doorway of the Tomb of Theodoric, Ravenna (p. 217 R). The marble doors at Cividale show the ornate character sometimes attempted (p. 217 M). Window openings, filled in with pierced slabs of marble or alabaster, were small (p. 217 L, P); those of the nave were in the walls above the aisle roofs (p. 210 B, F). This system was developed in the wonderful clear-stories of Gothic architecture (p. 307).

D. **Roofs.**—Timber roofs (pp. 210 A, H, 211 A) covered the central nave, and only simple forms of construction, such as king and queen post trusses, were employed. It is believed that the decoration of the visible framework was of later date, as at S. Miniato, Florence (p. 259 B). The narrower side aisles were occasionally vaulted and the apse was usually domed and lined with beautiful glass mosaics, which formed a fitting background to the sanctuary (pp. 205, 211, 217 A, B).

E. **Columns.**—These differ both in design and size, as they were often

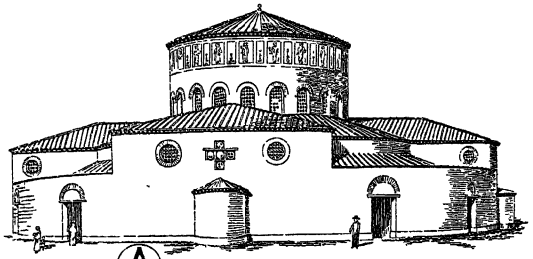
taken from earlier Roman buildings, which had either fallen into ruin or been purposely destroyed (pp. 205, 209, 217 G, J). It was natural that early Christian builders should use materials and ornament of the pagan Romans, and, as these belonged to the better period of Roman art, a grand effect was obtained though the details of the design were not necessarily homogeneous. Middleton states that all the fine marble columns, whether Doric, Ionic, or Corinthian, in the churches of Rome were taken from ancient Roman buildings, except those in S. Paolo fuori le Mura.

The carved capitals are governed by Roman pagan precedent (p. 217 G) and sometimes by that of Byzantine (p. 217 J), and in both the acanthus leaf forms an important part (p. 217 C, D).

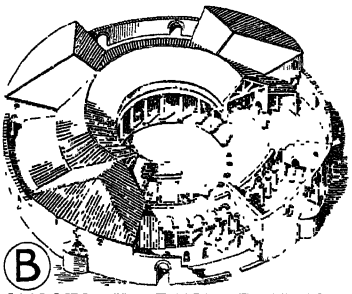
F. **Mouldings.**—These are coarse variations of old Roman types, and the carving, though rich in general effect, is crude; for the technique of the craftsman had gradually declined, and was at a low ebb during this period (p. 217 R). Enrichments were incised on mouldings in low relief, and the acanthus ornament, although still copied from the antique, became more conventional in form.

G. **Ornament.**—The introduction of colour gave richness and glimmering mystery to interiors. The mosaics which lined the domed apses generally represented Christ surrounded by apostles and saints with all those symbolic emblems which now entered largely into decoration (pp. 211 B, 217 A, B). The "arch of triumph," separating the nave from the bema, was ornamented with appropriate subjects; long friezes of figures line the wall above nave arcades (pp. 209 B, 211 B), and the wall spaces between the clear-story windows often had mosaics illustrating Christian history or doctrine. The figures are treated in strong colours on a gold background in a bold and simple design, and an earnest and solemn expression, fitting well the position they occupy, characterises the groups. The method of execution is coarse and bold, and no attempt was made at neatness of joint or regularity of bedding of the mosaic cubes. The coloured pavements were largely formed of slices from old Roman porphyry or marble columns, worked into designs by connecting bands of geometrical inlay on a field of white marble (p. 217 Q, S, T), and they greatly added to the general decorative effect. The glass mosaics used for the High Altar, ambones, screens, Easter candlesticks, and episcopal chairs, as in the fittings of the Church of S. Clemente, Rome (p. 198 C, D, F, G, H), were of a finer and more delicate description. Fonts, as from the Venice Museum (p. 217 K), and well-heads, as that from the Cloisters of S. Giovanni in Laterano, Rome (p. 217 N), were subjects upon which much skilful carving was expended. The sculptured sarcophagi of the Early Christians belonging to the great families of Rome, though of small artistic merit, have carved bas-reliefs in the quaint and crude craftsmanship of the period (p. 217 H), and it is not unusual to find, crowded together on one and the same sarcophagus, such various incidents as Adam and Eve in the Garden, Moses striking the rock, Daniel in the lions' den, the Virgin and Child worshipped by the Magi, and the denial of Peter. Sometimes, as in S. Apollinare in Classe, Ravenna, the Cross, the symbol of Christianity, is accompanied by other Christian symbols (p. 211 B) such as the emblems of evangelists and saints, which now replaced the attributes of heathen deities, and became usual features in the decorative scheme (p. 217 D, E, K, N). The Angel of S. Matthew, the Lion of S. Mark, the Ox of S. Luke, and the Eagle of S. John, as well as the dove, peacock, anchor, olive branch, and monogram of Christ (the Chi-rho),

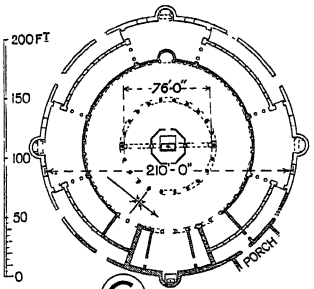
S. STEFANO ROTONDO: ROME



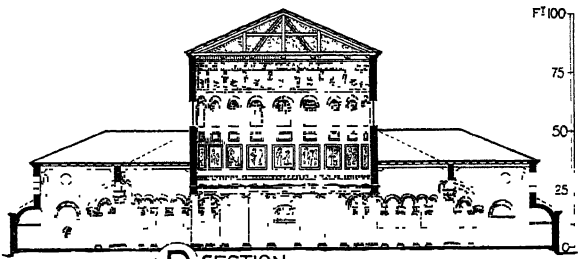
A EXTERIOR (RESTORED)



B SUGGESTED RESTORATION

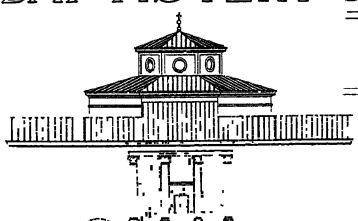


C PLAN

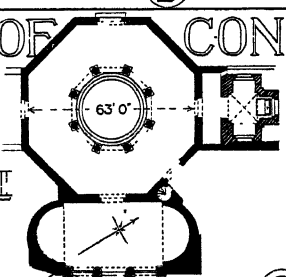


D SECTION (RESTORED)

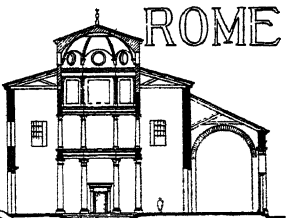
BAPTISTERY OF CONSTANTINE: ROME



E ELEVATION

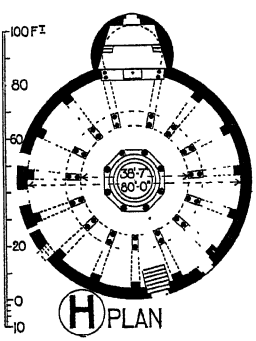


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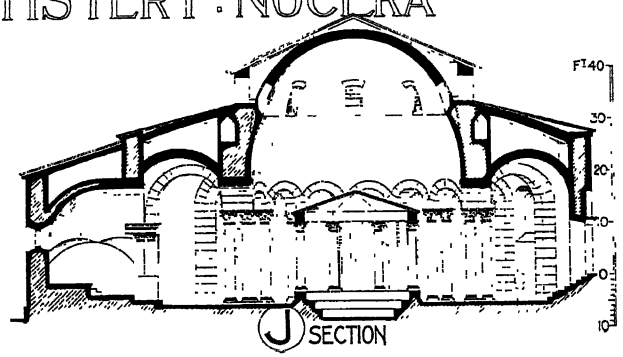


G TRANSVERSE SECTION

BAPTISTERY: NOCERA

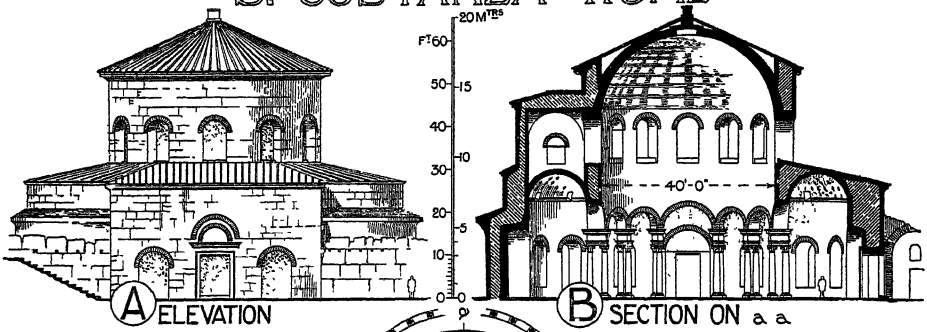


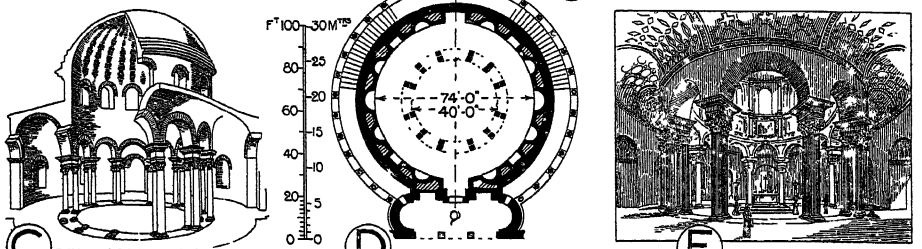
H PLAN



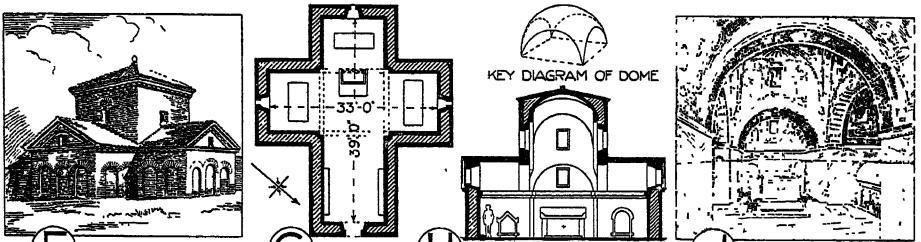
J SECTION

S. COSTANZA : ROME

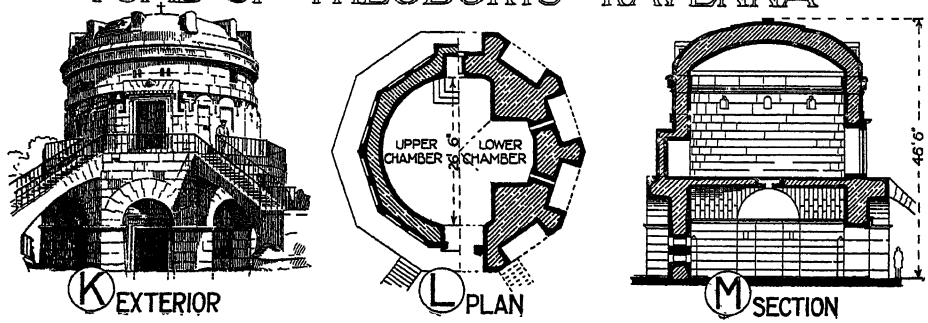




TOMB OF GALLA PLACIDIA : RAVENNA

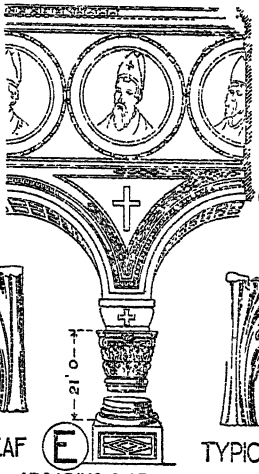


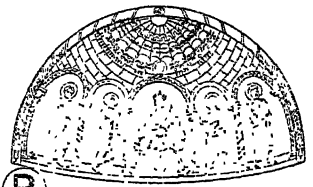
TOMB OF THEODORIC : RAVENNA



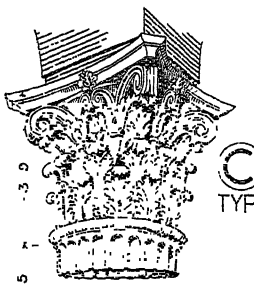


A MOSAIC: S. AGNESE: ROME



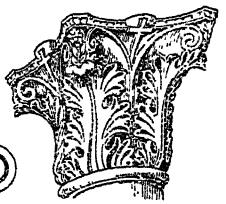


B MOSAIC: S.M MAGGIORE: ROME



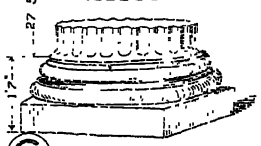


C TYPICAL LEAF

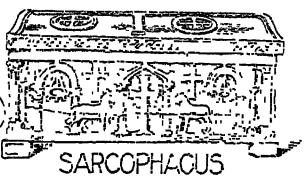


D TYPICAL ACANTHUS LEAF & CAPITAL

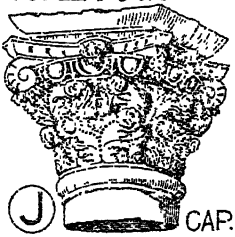
E ARCADING: S. APOLLINARE IN CLASSE · RAVENNA



G CORINTHIAN COLUMN S. PAOLO: ROME



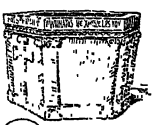
H SARCOPHAGUS S. APOLLINARE IN CLASSE: RAVENNA



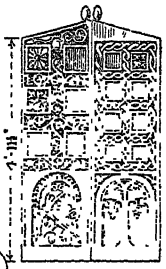
J CAP. S. APOLLINARE IN CLASSE: RAVENNA



L WINDOW GRADO CATH:



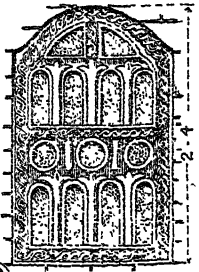
K FONT (VENICE MUSEUM)



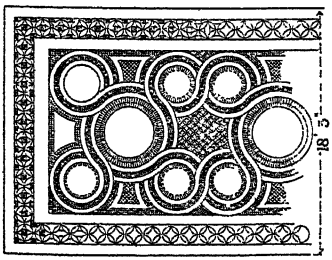
M MARBLE DOORS S. MARIA-IN-VALLE: CIVIDALE



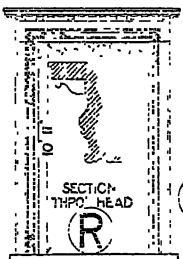
N WELL HEAD S. JOHN LATERAN CLOISTER ROME



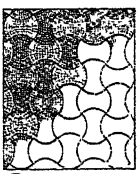
P WINDOW: VENICE (VII CENTURY)



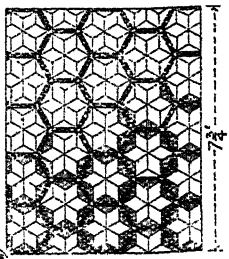
Q MOSAIC PAVING: S. LORENZO FUORI LE MURA: ROME



R DOORWAY, TOMB OF THEODORIC: RAVENNA



S MOSAIC FROM PARENZO



T MOSAIC PAVING SS. GIOVANNI E PAOLO: ROME

are woven into the scheme of symbolism of the new religion. Pictures, emblems, and symbols are all used heterogeneously to represent the various aspects of the Christian faith. Besides all this sumptuous decoration of church apses, roofs, walls, piers, and floors, there was the more delicate ornamental work in ivory and precious metals for diptychs, croziers, pyxes, chalices, and patens, and all the small appurtenances of Christian ritual, of which many beautiful specimens are to be seen in the British Museum.

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THE BYZANTINE EMPIRE

BYZANTINE ARCHITECTURE

1. INFLUENCES

i. Geographical.—Byzantium, renamed Constantinople after its Imperial founder, and also called "New Rome," was inaugurated as capital of the Roman Empire in A.D. 330. Like Rome in Italy it stands on seven hills, and is at the junction of the Bosphorus and the Sea of Marmora, where Europe and Asia are only divided by a narrow strip of water. This gave it a commanding and central position for the government of the expanding Roman Empire. It was also at the intersection of two great highways of commerce, the water highway between the Black Sea and Mediterranean, and the trade route between Europe and Asia; and thus it controlled the corn trade from the northern shores of the Euxine. The large, natural harbour of the Golden Horn possesses unusual advantages for commerce; for it is four miles in length, unaffected by tides, and of sufficient depth to render its quays accessible to ships of deep draught. Byzantine art pervaded all parts of the Eastern Roman Empire and was carried by traders to Greece, Russia, Asia Minor, North Africa, and even farther west, where it is found in Venice, Ravenna, and Périgueux, and it had considerable influence on the architecture of these districts. Venice, especially by her situation, was a connecting link between the Byzantine and Frankish Empires, and a depot for merchandise from both East and West.

ii. Geological.—Constantinople had no good building stone, and local materials such as clay for bricks and rubble for concrete were employed. Other materials more monumental in character had therefore to be imported:

marble was brought from the quarries in the islands and along the shores of the Eastern Mediterranean to Constantinople, which was the chief marble-working centre and supplied all parts of the Roman Empire. Byzantine architecture was further considerably influenced by the multitude of monolithic columns of such sizes as were obtainable from the different quarries. These were even introduced into the underground cisterns for the water storage of this Imperial city.

iii. Climatic.—The Romans adapted their methods of building to the Eastern climate of their new capital and to those conditions of life which had there already created traditional forms in art : thus flat roofs for summer resort are combined with oriental domes, and these, with small windows often high up in otherwise unbroken walls, form the chief features of the style, and sheltering arcades surrounded the open courts.

iv. Religious.—Constantine established Christianity as the state religion of the Roman Empire (A.D. 323), and it followed that the chief buildings erected in Byzantium, his new capital, were churches for the new religion, and they naturally, as time went on, came under the influence of their environment and so the basilican Early Christian type of church was merged in the domical Byzantine type which had originated farther east. Disputes and differences soon sprang up in the Church and became so rife that the Council of Nicæa (A.D. 325) was only the first of a series called to suppress heresies. The political division too between East and West was followed by a division of Churches, due to the " Filioque controversy " which arose in A.D. 589 and eventually culminated in the " Great Schism " in A.D. 1014. The Western Church held that the Spirit proceeded from the Father and Son, while the Eastern Church maintained that the Spirit proceeded from the Father only. The Eastern and Western Churches had been further divided by the " Iconoclastic movement," which resulted from the decree of the Eastern Emperor, Leo III (A.D. 717–741), who, fearing that paganism would be fostered by the use of sculpture, proscribed all representations of human or animal forms. Many Greek artists thereupon left Constantinople for Italy, where, under Pope Gregory II, they could carry on their art unmolested by Imperial decrees. This movement resulted in the admission of painted figures in the decoration of Eastern churches, but all sculptured statues were still excluded. These controversies and other differences in ritual have vitally affected Byzantine church architecture up to the present day. Byzantine architecture, devoid of statues, has always been and still remains the official style of the Greek or Orthodox Church of eastern Europe which has conserved unchanged its doctrines and ritual, and therefore the architecture also became stereotyped in form through all periods, in sharp contrast with the changes and additions which characterise the developments of Mediæval architecture to suit it to the varying requirements of church economy and ritual in western Europe.

v. Social.—Constantine developed the policy initiated by Diocletian (A.D. 284–305) of providing adequate civil government and military protection throughout the widespread Roman Empire and showed his statesmanship in his manner of dealing with this political problem, just as he did in securing support for himself from the growing power of Christianity by establishing it as the state religion. Diocletian's attempt, however, to solve the difficulty of managing the Eastern Empire from the west of Italy by instituting three seats of government, in addition to that of Rome, had proved ineffectual and open to abuse, and therefore when Constantine in his

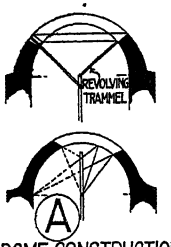
turn was confronted with the same difficulty he took the bold course of transplanting his capital from Rome to Byzantium (A.D. 324) because he recognised the political value of its central position in the Empire. Thus the seat of civil government, the military headquarters, and the Imperial court were all established in an eastern city of which the population has always been described as profligate, lazy, and vicious. Such a change of capital must have introduced Eastern methods of life and corrupt conditions into the Roman social economy, and thus have further contributed to that growth of luxury and vice which precipitated the fall of the Roman Empire. Byzantium was an old Greek city, and so the new Imperial buildings were executed by Greek craftsmen untrammelled by Roman traditions. Within the fortifications of Constantine, the new city was laid out on Roman lines, so far as the hills and site allowed. There was the central dividing street running through a succession of six forums of which the original Augusteum was adjoined, not only by S. Sophia, the greatest glory of early Christendom, but also by the Imperial palace, senate house, and law courts. The Forum of Constantine, with his great porphyry column, was the centre of commercial life, while, in the Hippodrome hard by, the chariot races took place which were the chief amusement of New Rome, as gladiatorial combat had been of Old Rome. The Hippodrome held the same position in the social life of New Rome as the Colosseum and thermæ did in Old Rome, and was indeed used for all purposes and on all occasions—for crowning of emperors, burning of martyrs, execution of criminals, and for triumphal processions—and so was truly termed the axis of the Byzantine world. The Romans paid the same attention to the water supply of their new as of their old capital, for water was brought by aqueducts and stored in enormous underground cisterns with roofs upheld by countless columns. As time went on and the population increased the city of Constantine was extended, and the Great Wall with its famous military gates and many towers was built by Theodosius II (A.D. 413) to set a circle of land and water fortifications against the formidable attacks of Huns and Goths. Constantine, the strong man and despotic ruler, was followed by emperors too weak to assert their authority, and thus the Empire was divided in A.D. 365. After Theodosius, the first Emperor to emerge into prominence was Justinian (A.D. 527–565), who codified the Roman laws, was a great patron of architecture, and was responsible not only for the rebuilding of S. Sophia, but also for many other churches in the city and in Syria and Palestine. During the Macedonian dynasty (A.D. 867–1057) and the Comnenian dynasty (A.D. 1057–1185) there was a remarkable outburst of building activity. In spite of its position as the bulwark of Christianity against Huns, Goths, and Saracens, and in spite, too, of its commercial prosperity and industrial activity, the Byzantine Empire was doomed to destruction. Decay from within facilitated defeat from without, for during its later period society was a tangled skein of treachery, immorality, and luxury, and the final crash came when the capital was captured by the Ottoman Turks in A.D. 1453.

vi. Historical.—Byzantium, said to have been founded about B.C. 750, is known to have been a Greek colony some three hundred years later, and in A.D. 324 became the capital of the Roman Empire. On the death of the Emperor Theodosius I (A.D. 395) the Empire was finally divided, and Byzantium continued to be the capital of the Eastern Empire, and throughout the Middle Ages was the bulwark of Christianity against the attacks of the Huns and Goths on the west, and of Saracens on the east. Honorius

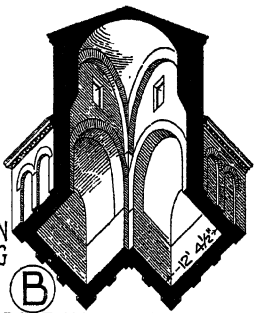
(A.D. 395–423), the first Western Emperor of the newly divided Empire, removed his residence from Rome to Ravenna on the east coast of Italy (A.D. 403), and consequently there was great building activity in that city, which, from its position, was peculiarly susceptible to Byzantine influence. A further impetus was given to building when Ravenna became an archiepiscopal see in A.D. 438. During the reign of Justinian (A.D. 527–565) Sicily and Italy were recovered to the Eastern Empire, and this new connection promoted a revival of building in Italy; here again Byzantine influence came into play, and from A.D. 539 to 752 Ravenna was the seat of the Exarch or representative of the Byzantine Emperors, and its buildings of this period became of a still more pronounced Byzantine type. The history of the Byzantine Empire from the fifth to the eleventh century is one of fluctuating and gradually declining fortunes. It first lost its western provinces in the fifth century, some of which, including Italy and Sicily, were regained in the sixth century under Justinian; while again in the following century its strength was greatly reduced by conflict with the Persians, but yet once more in the eighth century the Empire somewhat recovered itself, till in the ninth century it was again strong enough to carry on fierce contests against the Saracens, who were long kept at bay on the eastern side. In the eleventh century the decline was accelerated because, besides enemies on the east and north, it was now attacked by Normans and Venetians, till the "Latin occupation" of Byzantium was accomplished in A.D. 1204 and lasted to A.D. 1261. The old Empire still staggered on for another two hundred and fifty years, but its vitality had been sapped by internal dissensions and continuous warfare against the Persians and Turks, and it was finally captured by Ottoman Turks in A.D. 1453.

2. ARCHITECTURAL CHARACTER

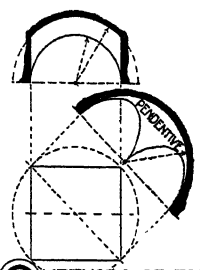
The character of Byzantine architecture, which dates from the fourth century to the present day, is determined by the development of the dome to cover circular, polygonal, and square plans for churches, tombs, and baptisteries (p. 227). The practice of placing many domes over one building is in strong contrast to the Romanesque system of vaulted roofs. The change from Roman and Early Christian forms was gradual, but in the course of two centuries the East asserted its influence; and though no exact line separates Early Christian and Byzantine styles, yet the basilican type, inherited from pagan Rome, is characteristic of the former, and the domed type, introduced from the East, of the latter. The system of construction in concrete and brickwork introduced by the Romans was adopted by the Byzantines. The carcase of concrete and brickwork was first completed and allowed to settle before the surface sheathing of unyielding marble slabs was added, and this independence of the component parts is characteristic of Byzantine construction (p. 223 G, M). Brickwork, moreover, lent itself externally to decorative caprices in patterns and banding, and internally it was suitable for covering with marble, mosaic, and fresco decoration. The Byzantines therefore took great pains in the manufacture of bricks, which were employed alike in military, ecclesiastical, and domestic architecture. The ordinary bricks were like the Roman, about an inch and a half in depth, and were laid on thick beds of mortar. This general use of brickwork necessitated special care in making mortar, which was composed of lime and sand with crushed pottery, tiles, or bricks, and much of it remains as hard as that in the best

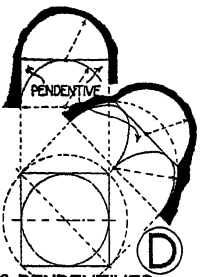


A
DOME CONSTRUCTION WITHOUT CENTERING

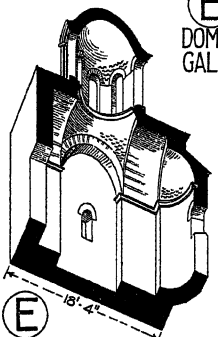


B
DOME ON PENDENTIVE: TOMB OF GALLA PLACIDIA: RAVENNA

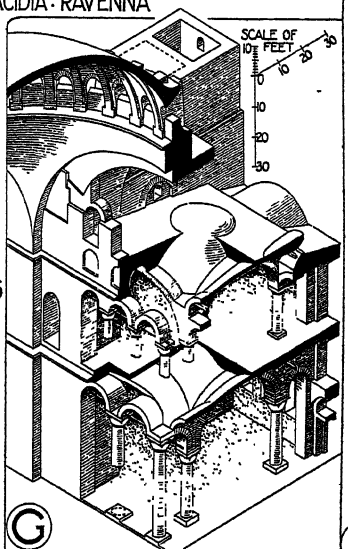




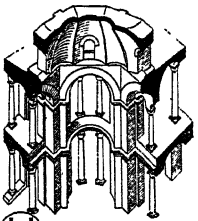
C METHODS OF FORMING PENDENTIVES D



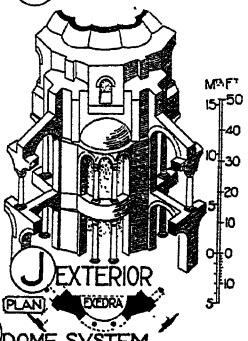
E
DOME WITH DRUM & PENDENTIVES MONASTERY: MT ATHOS



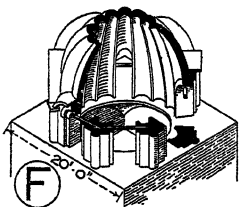
G
INTERIOR SHEWING DOME SYSTEM S. SOPHIA: CONSTANTINOPLE



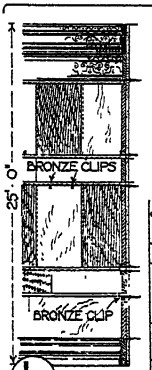
H INTERIOR



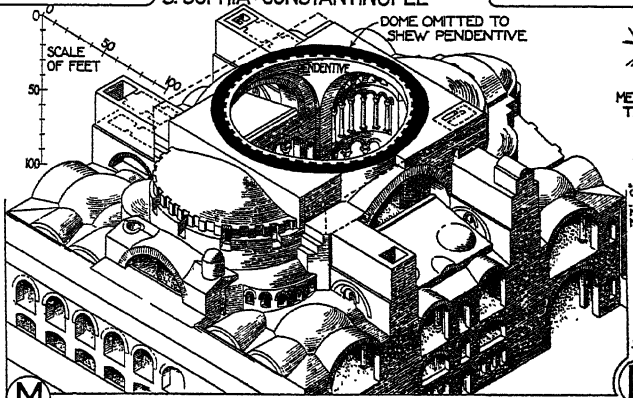
K DOME SYSTEM S. SERGIUS: CONSTANTINOPLE



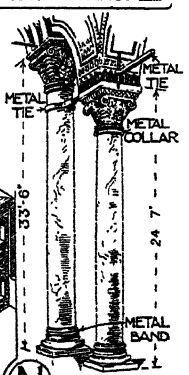
F
DOME WITH CONVOLUTIONS S. THEODORE: CONSTANTINOPLE



L METHOD OF FIXING MARBLE

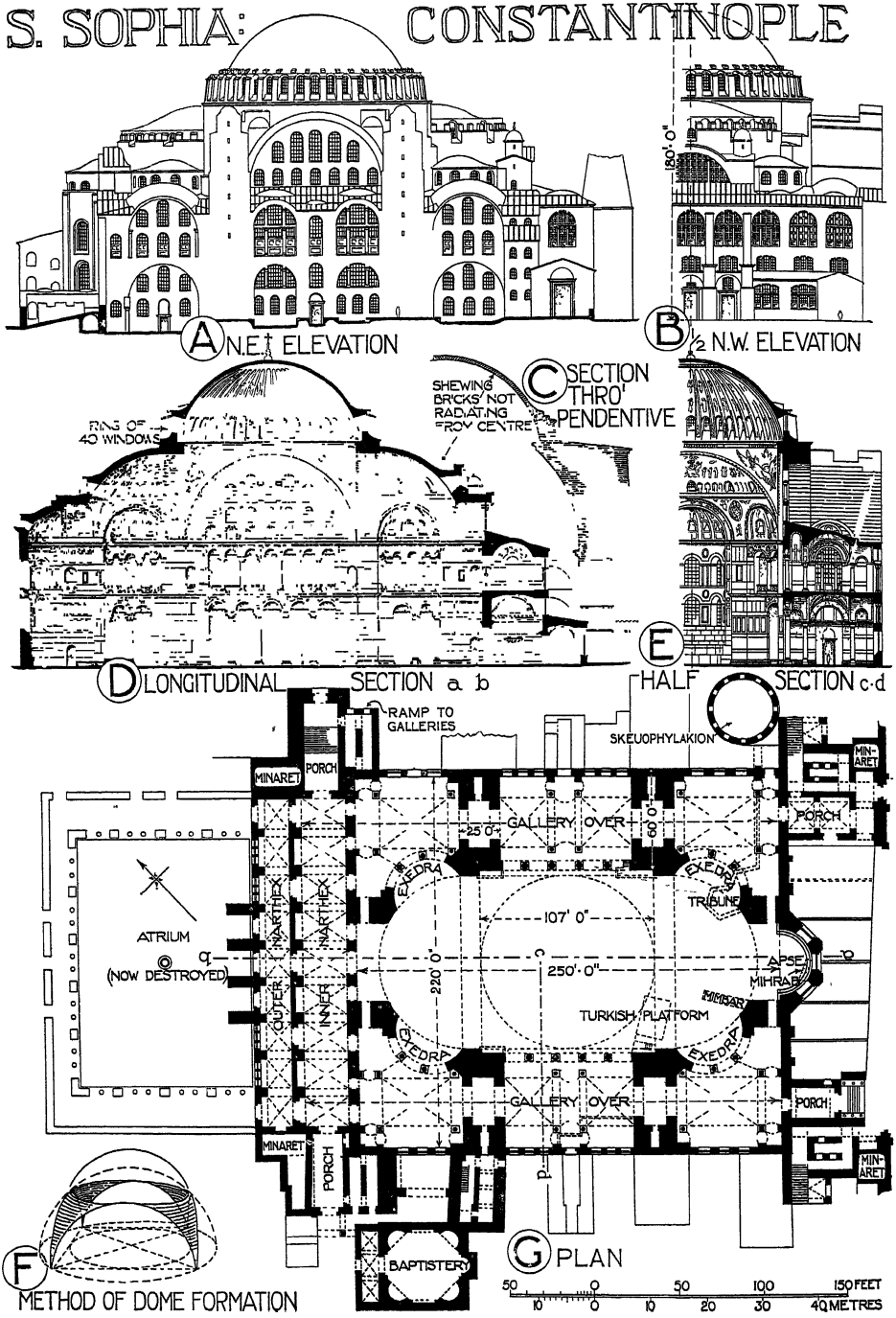


M EXTERIOR SHEWING DOME SYSTEM: S. SOPHIA: CONSTANTINOPLE



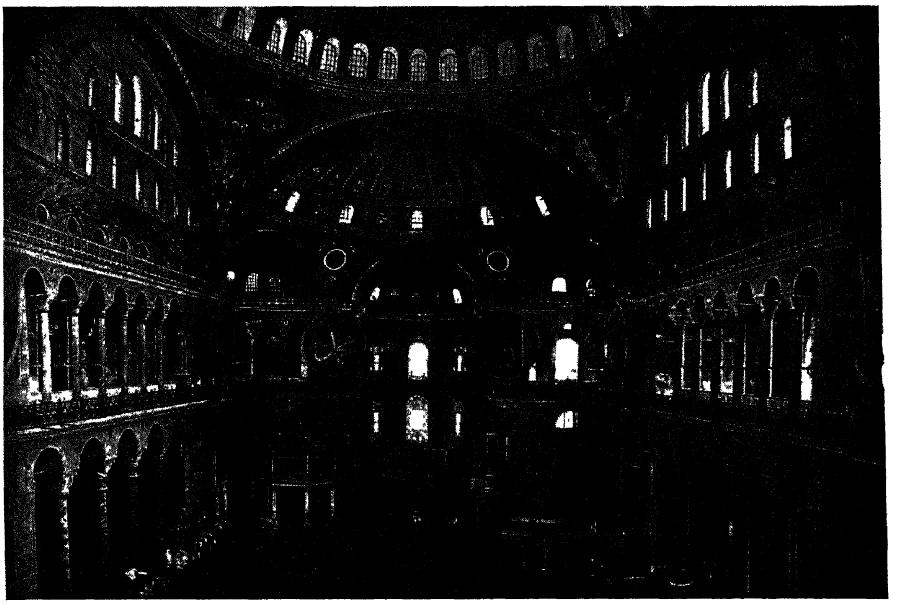
N INTERNAL COLUMNS

S. SOPHIA: CONSTANTINOPLE

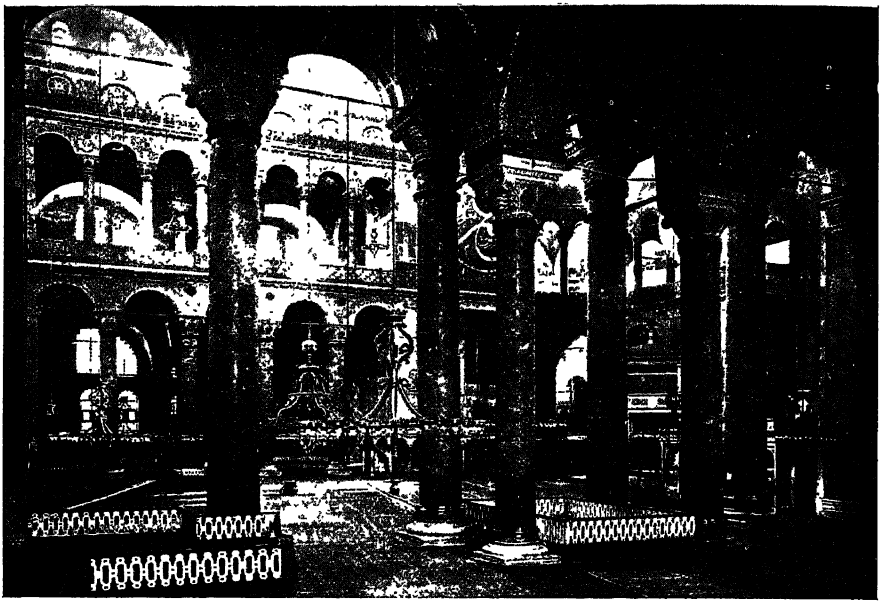




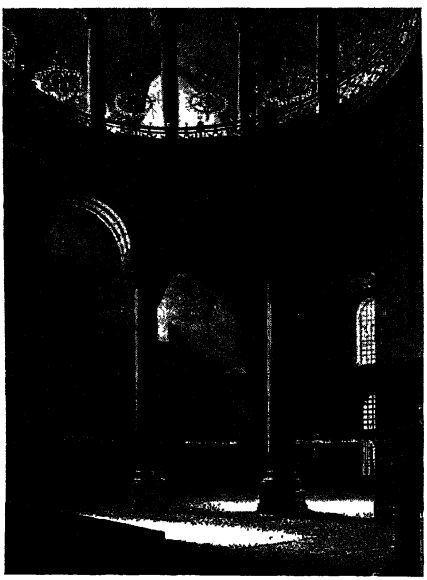
A. S. Sophia, Constantinople



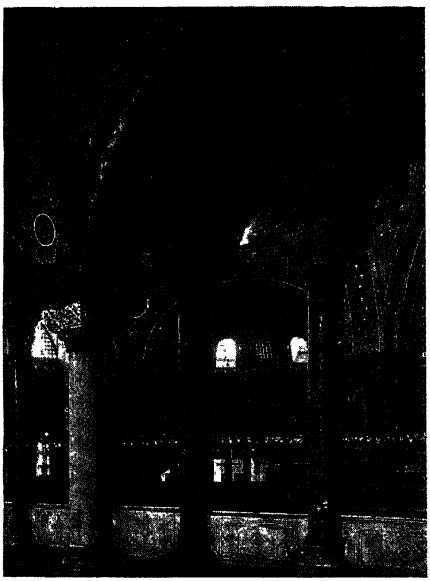
B. S. Sophia, Constantinople



A. S. Sophia, Constantinople : Interior from S.W. Aisle



B. Interior : An Exedra



C. Interior : The Gallery, S. Sophia, Constantinople

buildings of Rome, while the core of the wall was sometimes of concrete, as in the Roman period. The decorative character of external façades depended largely on the arrangement of the facing bricks, which were not always laid horizontally, but sometimes obliquely, sometimes in the form of the meander fret, sometimes in the chevron or herring-bone pattern, and in many other similar designs, giving great variety to the façades. An attempt was also made to ornament the rough brick exteriors by the use of stone bands and decorative arches. Walls were sheeted internally with marble (p. 223 L), and vaults and domes with coloured glass mosaics on a golden background (p. 225 B). The churches of Constantinople, Nicæa, and Salonica show the perfection to which this scheme of decoration was carried.

The dome, which had always been a traditional feature in the East, became the prevailing motif of Byzantine architecture, which was a fusion of the domical construction with the Classical columnar style. Domes of various types (p. 223) were now placed over square compartments by means of " pendentives " (pp. 223, 224, 225 B, 232 B, 233), whereas in Roman architecture domes were only used over circular or polygonal structures. These domes were frequently constructed of bricks or of some light porous stone, such as pumice, or even of pottery, as at S. Vitale, Ravenna (p. 231 D). Byzantine domes and vaults were, it is believed, constructed without temporary support or " centering " by the simple use of large flat bricks, and this is quite a distinct system probably derived from Eastern methods. Windows were formed in the lower portion of the dome which, in the later period, was hoisted upon a high " drum "—a feature which was still further embellished in the Renaissance period by the addition of an external peristyle or colonnade (p. 545). The grouping of small domes round the large central dome was effective (pp. 223 M, 225 A), and one of the most remarkable peculiarities of Byzantine churches was that the forms of the vaults and domes were visible externally, undisguised by any timber roof (p. 224 A, D) ; thus in the Byzantine style the exterior closely corresponds with the interior. In S. Sophia is seen the fully developed Byzantine style : for the columns are not merely ornamental, but really support the galleries, and semicircular arches rest directly on columns with capitals suitable for supporting the springers of arches of which the voussoirs were rectangular blocks, not set in receding moulded planes as in Mediæval architecture (p. 267 B). The Byzantine capital was shaped to form a simple transition from the square abacus to the circular shaft. The numerous columns in S. Sophia exhibit the remarkable and beautiful structural expedient of surrounding the shafts, both under the capital and above the base, by bronze annulets (pp. 223 N, 226 A). Monolithic shafts which, owing to the height required, had to be set up contrary to the stratification of the quarry, were therefore liable to split, and these bronze annulets not only overcame this danger, but also prevented the lead " seating " from being forced out by the superincumbent weight. Although marble columns from old buildings were utilised, the importation of newly quarried columns and rare marbles for decorative purposes continued, and the Theodosian code encouraged and regulated this industry, so that coloured marbles were employed to a greater extent than in preceding styles. The interiors were beautified by pavements in " opus sectile " or " opus Alexandrinum " (p. 137), and in domes and apses by coloured mosaics, which were of glass rendered opaque by oxide of tin, an invention which had also been employed in the Early Christian period. This use of rich marbles and mosaics resulted in the rounding of angles and in an absence

of mouldings and cornices, so that the mosaic designs and pictures might continue uninterrupted over wall surfaces, piers, arches, domes, and apses. Marble and mosaic were used broadly to make a complete lining for a rough carcase, and mouldings were replaced by decorative bands formed in the mosaic. One surface melts into another as the mosaic is continued from arch and pendentive upwards to the dome, while the gold of the background was even introduced into the figures, and thus unity of treatment was always maintained.

The Greek church in Moscow Road, London, designed by Oldrid Scott, and the Roman Catholic Cathedral, Westminster, by John F. Bentley, are examples of the Byzantine treatment applied to churches in England. The character of Byzantine architecture shows development in its three main periods: (1) A.D. 324–850, including the reigns of Constantine and Justinian. (2) A.D. 850–1200, including the Macedonian and Comnenian dynasties. (3) A.D. 1200 to the present day. The character was also affected by local influences, as seen in examples found in Turkey, Italy, Greece, Macedonia, Armenia, Syria, Russia, Serbia, and France.

3. EXAMPLES

SS. Sergius and Bacchus, Constantinople (A.D. 527) (p. 234), erected by Justinian, is nearly square on plan, 109 ft. by 92 ft., and the arrangement of the interior is similar to that of S. Vitale (p. 231 C), but it has only four colonnaded exedræ to the central octagon, which is enclosed in a square. The church would resemble S. Sophia in plan if it were cut in two, and a dome on pendentives placed over an intervening square and the whole doubled in size. The dome over the central space, 52 ft. in diameter and 69 ft. 6 ins. high, is visible externally, for there is no outer timber roof, and it is of a peculiar, melon-like form with ridges and furrows from base to summit (p. 223 H, J, K). Picturesquely situated on the shores of the Bosphorus, the church was in a ruinous condition before it was partially restored, but the beautiful frescoes and mosaics have been irreparably damaged by damp.

S. Sophia, Constantinople (*Hagia Sophia* = divine wisdom) (A.D. 532–537) (pp. 224, 225, 226), was built by order of Justinian by the architects Anthemius of Tralles and Isodorus of Miletus, on the site of two successive basilican churches of the same name, erected respectively by Constantine (A.D. 360) and Theodosius II (A.D. 415). It now forms the most important mosque in Constantinople. The noble atrium forming the approach to the church, now destitute of its marble columns, leads through the great triple portal to the outer narthex, and beyond is the imposing main narthex, 200 ft. by 30 ft., which is in two storeys, the lower of which was used by catechumens and penitents, while the upper forms part of the gallery to the church. The plan of the church proper consists of a central space 107 ft. square, with four massive stone piers 25 ft. by 60 ft., pierced by arches for aisles and gallery, supporting four semicircular arches upon which rests the dome, 107 ft. in diameter and 180 ft. above the ground. East and west of this central area are great hemicycles, crowned with semi-domes, and off these are exedræ, in their turn covered with semi-domes—the whole area thus enclosed forming a great oval nave, 225 ft. by 107 ft., being about 28 ft. wider than the huge vaulted tepidarium of the Thermæ of Caracalla. .North and south of this nave are two-storeyed aisles over 50 ft. wide, the upper storey being the "Gynæceum" or women's gallery, reached from the outside by sloping

ascents at each corner and by stone steps in the interior. These aisles bring the main building approximately to a square which, excluding the eastern apse and the narthex, measures 250 ft. by 220 ft. North and south, forming continuations of the four great piers already mentioned, are massive buttresses 25 ft. wide by 60 ft. long, which take the thrust of the main arches and central dome on the two sides where there are no semi-domes (p. 223 M). The two principal semi-domes, east and west, abut against the great supporting arches and thus act as buttresses to the central dome.

The monumental interior (p. 225 B) gives the impression of one vast domed space, but the detailed effect, with the great hemicycles and smaller exedræ, is one of extreme intricacy, in spite of the simplicity of the general scheme. Scale is obtained by the gradation of the various parts, from the two-storeyed arcades of the aisles to the lofty dome which rests, with little apparent support, like a canopy over the centre, or, as Procopius described it, " as if suspended by a chain from heaven." The gigantic pendentives to the central dome overhang 25 ft. and are themselves over 60 ft. high (p. 224 C), above which the dome itself rises only 50 ft. The dome is constructed of bricks about 27 ins. square in the lower part and 24 ins. square at the crown, and 2 ins. thick, with mortar joints of nearly the same thickness. The joints do not radiate from the centre of the dome, but have a flatter inclination, in order to diminish the thrust. Walls and piers are sheeted with marbles of Phrygian white, Laconian green, Lybian blue, Celtic black, besides Thessalian and Bosphorus marbles, all fixed by metal clips (p. 223 L). Floors are laid with coloured mosaics in various patterns, and vaults and domes are enriched with glass mosaics representing apostles, angels, and saints on a glittering golden ground. Although many of these are now concealed by matting, covered with plaster, or are replaced by quotations from the Koran, yet the four pendentives still exhibit the six-winged seraphim, whom Mahometans acknowledge under the names of the archangels Gabriel, Michael, Raphael, and Israfil, and when the light is favourable the figure of Christ can be dimly discerned above the apse which now contains the " mihrab " pointing towards Mecca. Columns of many-coloured marbles, to the number of 107, are used constructively to support the groined vaults under the galleries, and moulded bronze rings encircle the column shafts at their junction with capitals and bases, while the outward pressure of the arches is counteracted by tie-rods (pp. 223 N, 226). The lower storeys of the aisles north and south of the central space are supported by four columns of dark green marble from the Temple of Artemis, Ephesus (pp. 102, 226), while the upper storeys have six columns of the same marble. Each of the four exedræ (p. 226 B) has two large columns of dark-red porphyry from the Great Temple, Baalbek (p. 145), and six smaller columns on the upper storey. It is a coincidence that there are 107 columns (40 below and 67 above), and that the dome measures 107 ft. in diameter. The capitals are mostly of the cubiform type, with small Ionic angle volutes and delicately incised carving, in which is sometimes woven the monogram of Justinian, while a variation of the dosseret block on the lines of the Classical abacus is generally used above the capital. The lighting is partly effected by forty small windows in the lower part of the dome (p. 225) and by twelve windows grouped in the spandrel walls north and south under the great arches (p. 225 B) which support the dome, while there are windows in the lower part of the domes of the exedræ and of the apse. Many of the windows are small and spanned by

semicircular arches; others are more elaborate, as in the "Gynæceum" in which large semicircular-headed openings are divided into six by columns in two heights, between which marble lattice screens admit light through glazed openings about 7 ins. square (p. 240 K).

The exterior (p. 225 A) is less impressive than the interior, for the brick walls are plastered over and distempered red and white in alternate bands in imitation of brick and stone. The actual shape of the domes and semi-domes is visible, as there is only a covering of lead, ¼ in. thick, resting on wooden battens placed immediately on the outer surface of the brick domes. The immense buttresses and the deeply recessed spandrel wall between them are imposing features in an exterior which depends for effect entirely on the massiveness and general symmetry of its proportions, but lacks that dignity which would be secured by the addition of a drum to the central dome. The lofty minarets were not part of the original design, but were added by the Mahometans after the capture of Constantinople, and they frame in the subsidiary buildings of the Turkish period. S. Sophia stands unique and was never subsequently imitated in the Byzantine style either in plan or general treatment, and, as the Parthenon is the masterpiece of Greek architecture and the Pantheon of Roman, so it remains for all ages the masterpiece of Byzantine architecture.

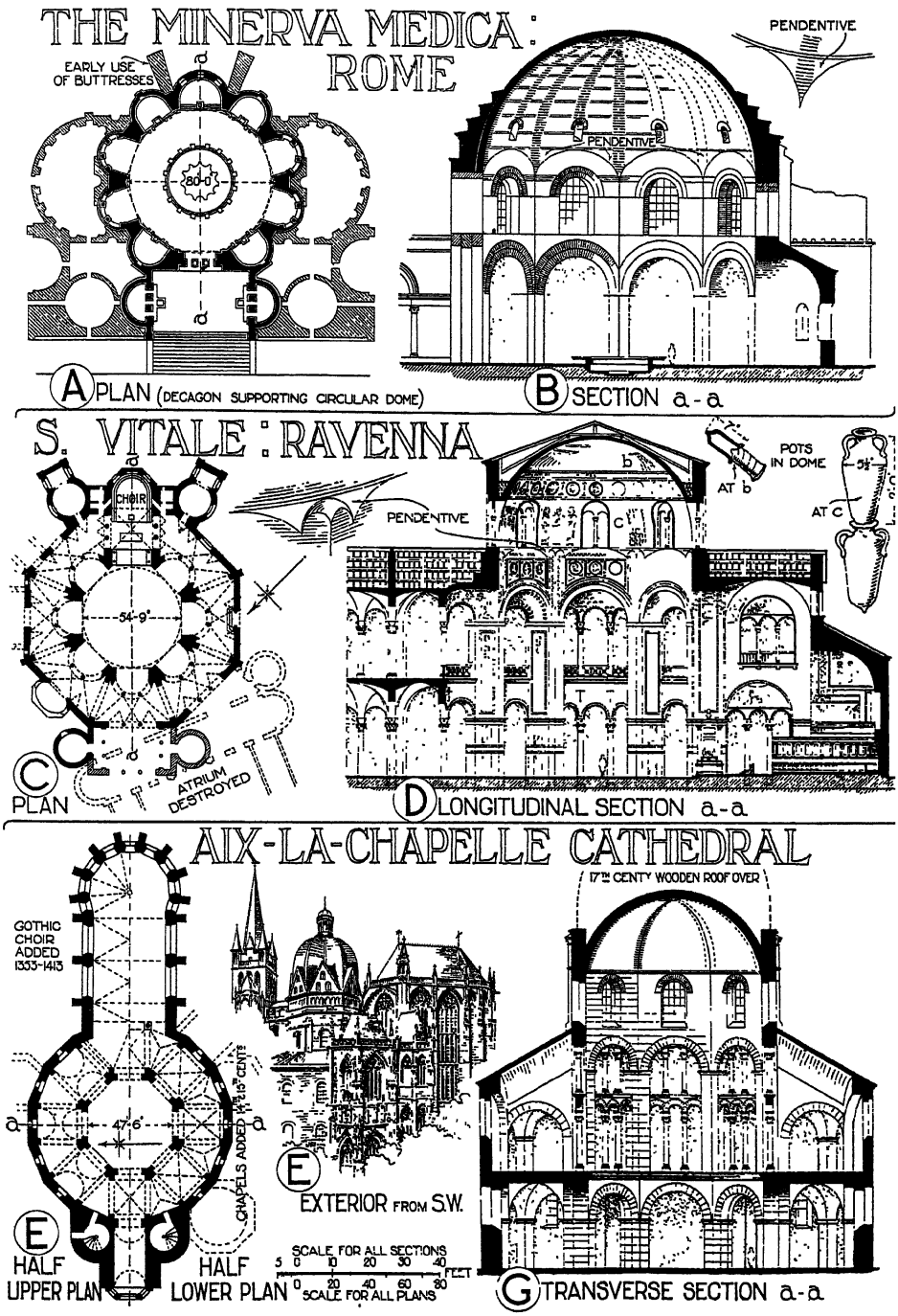
S. Irene, Constantinople (A.D. 740) (p. 239 A), was originally erected by Constantine, but was several times destroyed and finally rebuilt. It is one of the twenty-one Christian churches which still remain in Constantinople, though diverted to other uses. It preserves the basilican plan of nave and aisles with eastern apse and western atrium, and the dome is believed to be the earliest example raised on a high drum, pierced with windows, which was found to give dignity to the church, and so became the usual treatment.

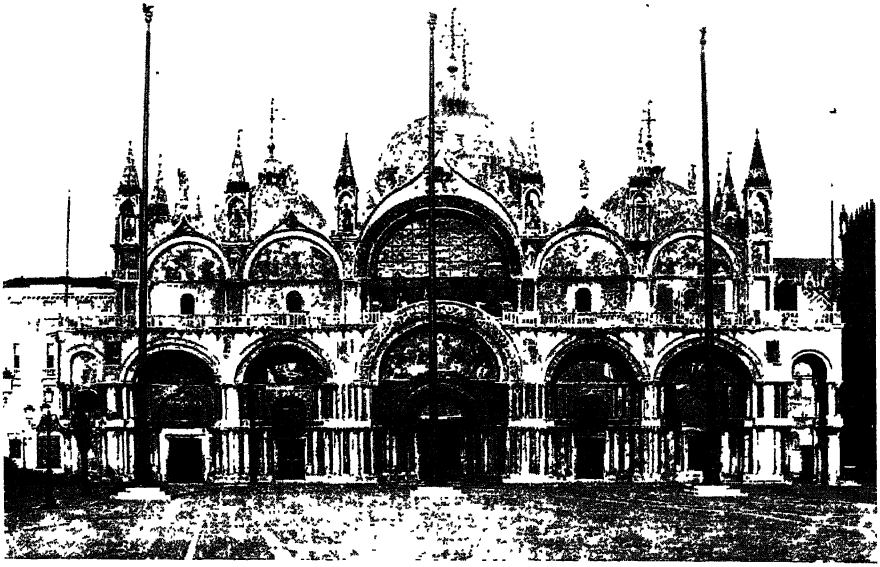
S. Theodore, Constantinople (c. A.D. 1100) (p. 234), is a perfect specimen of a miniature Byzantine church, although now a mosque. It has a double narthex crowned with domes leading into a nave 29 ft. 6 ins. square, with central dome formed with convolutions and set on a drum 13 ft. in diameter (p. 223 F) and with an apse semicircular internally and polygonal externally. The exterior is one of the most elaborate of all Byzantine churches in Constantinople, built of brick and stone in bands, with columns supporting semicircular arches surmounted by windows within a second tier of similar arches recessed in rings, while over the outer narthex are the three octagonal tile-covered domes on high drums.

S. Saviour in the Chora, Constantinople (c. A.D. 1050), was founded in the fourth century. The central area has a dome on a high drum, 17 ft. 6 ins. in diameter, pierced by windows, and the nave has semicircular windows on three sides and an apse at the sanctuary end. The inner and outer narthex, with their domes, are richly ornamented with fine early mosaics, and hence it is known as the "Mosaic Mosque." The façade in brick and stone banding is generally supposed to have served as a model for that of S. Mark, Venice (p. 235).

The **Church of the Apostles, Constantinople,** founded by Constantine the Great, was rebuilt by Justinian and destroyed in A.D. 1463 to make way for the mosque of Sultan Mahomet II, and has a special interest, as with its lengthened western nave and five domes it is said to have been the prototype of S. Mark's, Venice (p. 235).

S. Vitale, Ravenna (A.D. 526–547) (pp. 231, 239 B), was founded by


THE MINERVA MEDICA : ROME
EARLY USE OF BUTTRESSES
80-0
PENDENTIVE
PENDENTIVE
A PLAN (DECAGON SUPPORTING CIRCULAR DOME)
B SECTION a-a
S. VITALE : RAVENNA
CHOIR
54-9
PENDENTIVE
POTS IN DOME
AT b
AT c
ATRIUM DESTROYED
C PLAN
D LONGITUDINAL SECTION a-a
AIX-LA-CHAPELLE CATHEDRAL
GOTHIC CHOIR ADDED 1353-1413
47-6
CHAPELS ADDED IN 15th CENTY
17th CENTY WOODEN ROOF OVER
E EXTERIOR FROM S.W.
E HALF UPPER PLAN
HALF LOWER PLAN
SCALE FOR ALL SECTIONS
SCALE FOR ALL PLANS
G TRANSVERSE SECTION a-a

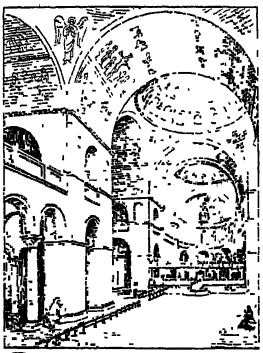


A. S. Mark, Venice

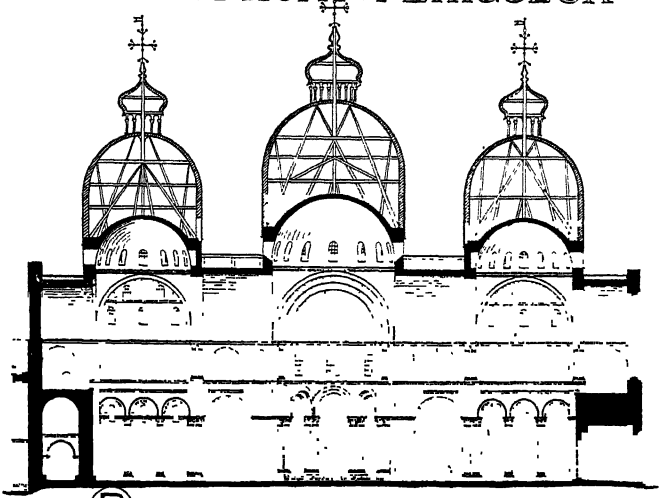


B. S. Mark, Venice

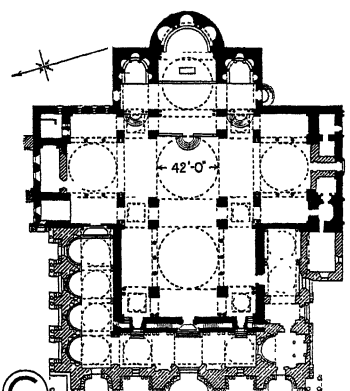
S. MARK: VENICE & S. FRONT: PERIGUEUX



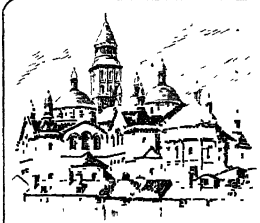
A INTERIOR OF S. MARK LOOKING E.



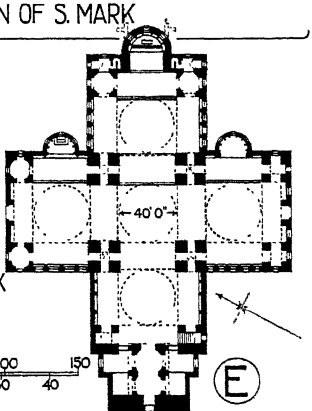
B TRANSVERSE SECTION OF S. MARK



C PLAN OF S. MARK



D S. FRONT: PERIGUEUX FROM S. E.



E PLAN OF S. FRONT

SCALE FOR PLANS

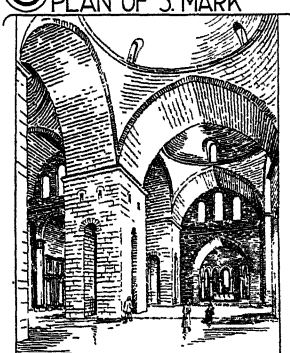
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METRES 10 5 0 10 20 30 40

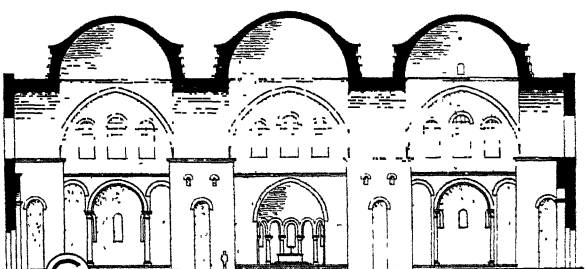
SCALE FOR SECTIONS

FEET 20 0 20 40 60 80 100 120 140

METRES 5 0 5 10 20 30 40



F INTERIOR OF S. FRONT LOOKING E.

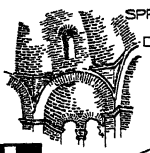


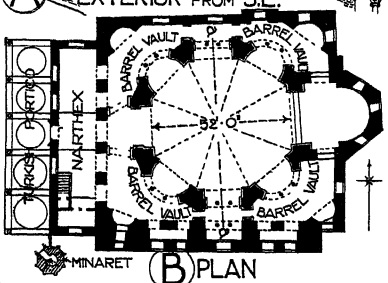
G TRANSVERSE SECTION OF S. FRONT

SS. SERGIUS & BACCHUS : CONSTANTINOPLE

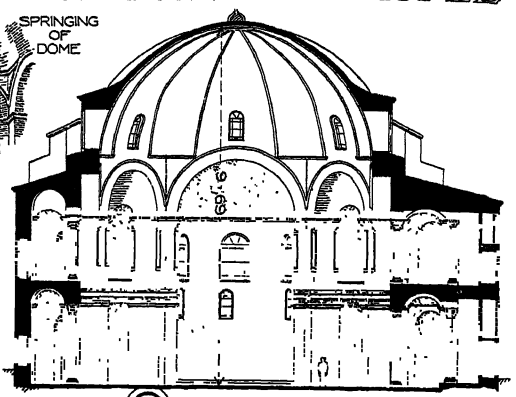


A EXTERIOR FROM S.E.





B PLAN

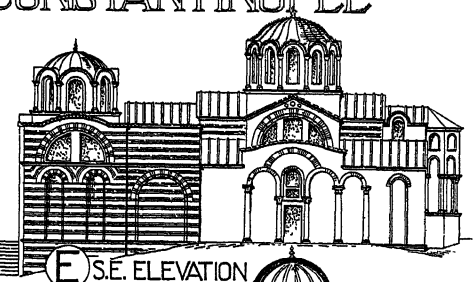


C SECTION a-a

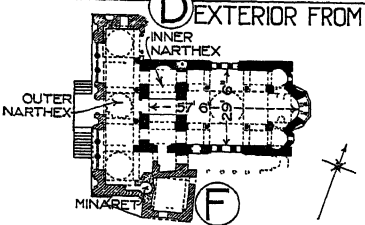
S. THEODORE : CONSTANTINOPLE



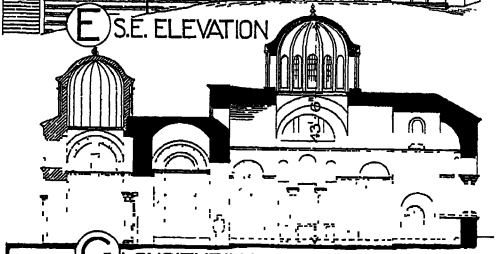
D EXTERIOR FROM N.W.



E S.E. ELEVATION

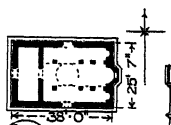


F PLAN

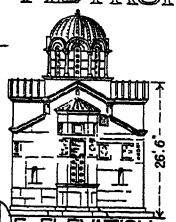


G LONGITUDINAL SECTION

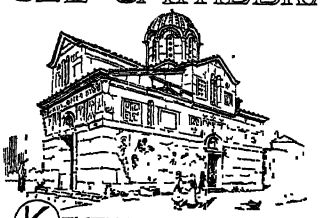
LITTLE METROPOLE CATHEDRAL : ATHENS



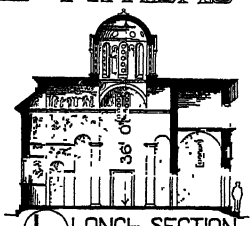
H PLAN



J E. ELEVATION



K EXTERIOR FROM N.W.



L LONGL= SECTION

SCALE FOR ALL PLANS
FEET 10 0 10 20 30 40 50 60 70 80 90
METRES 0 5 10 15 20 25

SCALE FOR ALL ELEVNS & SECTNS.
10 FT. 0 10 20 30 40
1 0 5 10 METRES

Justinian to commemorate his recovery of Ravenna and was designed on the model of the "Minerva Medica," Rome; but Byzantine influence is everywhere evident. An inner octagon of 54 ft. 9 ins. is enclosed by an outer octagon of 115 ft. The apsidal chancel is successfully designed to open direct from one side of the inner octagon, while the other seven arches enclose columns placed on a half-circle carrying the gallery usual in Eastern churches. The dome is singular, as it rests on pendentives formed of small arches (p. 231 D) and is constructed of earthen pots fitted into each other, those in the upper part being laid horizontally, thus producing a lightness of structure which did not require the arches and buttresses found necessary in SS. Sergius and Bacchus and S. Sophia, Constantinople. This remarkable construction in pottery is protected by a timber roof, thus differing from Roman usage and approximating to the practice which prevailed among Mediæval architects (p. 231 D). The interior is remarkable for the beauty of its carved capitals with dosseret blocks (p. 240 C), while the mosaics which line the vaults of the sanctuary are unique in this form of Christian art inasmuch as they are a most valuable record of the costumes of the period. Here are life-size figures of Justinian and the Empress Theodora at the consecration of the church in all the glittering array of state panoply and surrounded by the ladies of the Court. Prominent in the centre of the apse is the commanding figure of Christ seated on an azure globe and holding the Crown of Life and the seven-sealed book. The exterior in large thin bricks with thick mortar joints is characteristic of the plain external treatment of so many Byzantine buildings. The fine cathedral of Aix-la-Chapelle (p. 231), which was built by Charlemagne as a mausoleum, much resembles S. Vitale, and in all probability was derived from it (p. 290), while SS. Sergius and Bacchus is also similar in plan, but consists of an octagon enclosed in a square (p. 228).

S. Mark, Venice (A.D. 1042–1071) (pp. 232, 233), reflects the art of Byzantium which so largely influenced the architecture of Venice, situated midway between East and West. The glittering, resplendent façade of the narthex faces the great Piazza of San Marco, which was, like the Forum in ancient Rome, the centre of city life, with the soaring campanile and the Palace of the Doge, all surrounded by stately arcades. This vast open space, paved in marble, forms, in fact, a great public atrium to the church dedicated to the sea-city's patron saint. The history of this city planning, which swept away the waters of an intruding canal and pushed back the buildings to give space to the cathedral, reveals the pride of the prosperous Republic in her glorious religious monument, which was, in its architectural style, an assertion of the independent spirit of a freedom-loving people who were always intolerant of the domination of the Popes of Rome. This world-famous edifice stands on the site of the original basilican church, which was founded in A.D. 864 to receive the body of S. Mark, and partially burnt down in A.D. 976. Between A.D. 1042 and 1071 the plan was completely transformed to resemble that of the Church of the Apostles, Constantinople (p. 230): transepts were added, the sanctuary was extended, the narthex was continued along the north and south sides, and the interior altered from the basilican to the Byzantine plan of a Greek cross surmounted by domes. The plan (p. 233 C) has a central dome, 42 ft. in diameter, and a dome over each arm of the cross. The great square piers, 28 ft. by 21 ft., which carry the dome are pierced both on the ground and gallery levels, and arcades support passages connecting the central piers to the extremities of the nave and tran-

septs. The addition of the narthex and baptistery makes the church approximately square on plan.

The interior (p. 232 B) is gorgeous in coloured marbles and brilliant glass mosaics which, extending in one continuous surface over vault and dome, picture the story of the Creation, the fall of man, and the Redemption, the miracles of Christ and the legends of the saints, all enshrined in a glowing golden background. Mosaic is here, as also in the vaulted narthex, the real and essential decoration, to which all architectural detail is subordinated, and it is used like the stained glass of Mediæval churches to produce a popular representation of incidents from the Old and New Testaments.

The exterior, with its five portals (p. 232 A) which form the lower part of the entrance façade, has remarkable coloured mosaic panels in the tympana and spandrels of the great semicircular arches. The exterior has indeed a character peculiarly its own ; for it is a marvellous blending into one homogeneous whole of a variety of features from many foreign lands. Bronze horses from the triumphal arch of Nero, columns of porphyry, alabaster, and verde-antico from Constantinople and Alexandria, coloured marble facing from Eastern cities, all form part of the world-wide contribution which, in the twelfth century, commanders of warships and captains of trading vessels were alike bidden to levy and bring in as votive offerings for success in commerce and victory in war. In the thirteenth century a crown of gold was given to the building by the unique timber domes (p. 233 B), and finally, in the fifteenth century, the façade was further embellished by Gothic canopied niches, ogee arches, and crocketed pinnacles, all of which form a delicate stone framework to the glittering mosaics below. S. Mark depends for beauty externally not only on delicate sculpture, but also on subtle, variable, and indescribable colour, produced by transparent alabaster, polished marble, and lustrous gold mosaic, all set against the azure blue of the Venetian sky and bathed in the sunshine reflected from the shimmering waters of the Adriatic.

S. Fosca, Torcello (A.D. 1108), forming, with the old cathedral (p. 204) and campanile, a picturesque group rising from this island in the lagoons, is based on the Byzantine plan, with central dome supported by eight columns, while externally an arcade on five sides forms a semi-octagon. The details indicate that this simple building was constructed by Byzantine Greeks who also worked on the rebuilding of S. Mark, Venice.

S. Antonio, Padua (A.D. 1232–1307), the burial-place of S. Anthony, friend of S. Francis of Assisi, is in plan an obvious imitation of S. Mark, Venice, with the addition of a remarkable apse with nine radiating chapels producing a chevet, like that of French Gothic cathedrals. The interior suffers from the absence of mosaics, which were the necessary complement of a Byzantine interior ; but the exterior, with its seven domes and turrets, has a decidedly Eastern aspect, while Romanesque feeling is seen in the arcaded galleries, reminiscent of Lombard churches.

The **Little Metropole Cathedral, Athens** (c. A.D. 1250) (p. 234), is the smallest building in the world dignified by the name of cathedral, for it measures only 38 ft. by about 25 ft., and the dome, supported on a high octagonal drum, is only 9 ft. in diameter, pierced by tiny windows, and its façades are largely made up of miscellaneous marbles from old Greek buildings.

The **Kapnikarea Church, Athens** (A.D. 875), and **S. Theodore, Athens** (A.D. 1049), are similar miniature churches with small central domes raised

on octagonal drums, while the **Church of the Monastery of S. Luke of Stiris** (eleventh century), north of the Gulf of Corinth, has two domes and is remarkable for mosaics and screen (p. 240 L). The diminutive proportions of these churches are due to the simple ritual of the Greek Orthodox Church and to the absence of instrumental music and of chairs for the worshippers—an influence which did not apply to churches in the Byzantine style erected, like S. Mark, Venice, for Roman Catholic ritual.

S. Sophia, Salonica (A.D. 560), one of the earliest Byzantine domed churches, was much altered by the Turks, but still has some fine ninth-century mosaics, while the **Church of the Holy Apostles, Salonica,** had a central and four smaller domes, typical of later Byzantine architecture.

S. Sophia, Trebizond (A.D. 1143), resembles the smaller churches of Athens in general character.

The **Churches at Bozra** and **Ezra** in Syria follow a favourite plan of a circle or octagon within a square with niches in the angles. They are considered to be prototypes of Byzantine churches like SS. Sergius and Bacchus, Constantinople (p. 234 B), and S. Vitale, Ravenna (p. 231 C).

The **Church of the Assumption, Moscow** (A.D. 1479), like the churches at Kieff and Novgorod, is a curious later type, because Byzantine influence had lost much of its original force after Byzantium had been conquered by the Turks in A.D. 1453, and so these Russian churches are crowned with bulbous-shaped domes derived from Tartar sources.

The **Church at Gracanica** (A.D. 1321), in Serbia, with its characteristic exterior of brick and stone and its domes on high drums grouped around the dominating central dome, is probably the most remarkable of all the churches in that country, where the architecture was midway between two influences, arising respectively from Constantinople on the east and Rome on the west, the former prevailing. The churches at Sopocani (A.D. 1190), Hilendar (A.D. 1196), Decani (A.D. 1330), Ravanica (A.D. 1387), and Lazarica are other Serbian examples of note.

S. Front, Périgueux (A.D. 1120) (p. 233), is an interesting product of Byzantine influence carried west along trade routes by Venetian merchants, and is an almost identical copy in plan of S. Mark, Venice. The entire absence of mosaic, however, shows by contrast how much Byzantine interiors owe to that art, for this French version, which is described in "French Romanesque" (p. 278), appears bare and plain in comparison with the pure Byzantine original.

4. COMPARATIVE ANALYSIS

A. **Plans.**—The domical method of construction governs the plan of Byzantine churches, which are all distinguished by a central space, covered with a dome on pendentives (pp. 223, 224). Short arms on each side form a Greek cross, and the filling in of the angles brings the plan nearly to a square (p. 234). Opposite the entrance was the apse for the altar in the sanctuary, which was screened off by the characteristic "Iconostasis" with its three doors, and there were also lateral ritual chapels. The narthex formed an entrance vestibule and was frequently crowned with domes. The essential difference in plan between a Byzantine and an Early Christian church may be summed up as follows: Byzantine churches, unlike Early Christian churches with their campanili, had no bell-towers. The Byzantine church, because of the grouping of subsidiary domes round a central dome,

gives a vertical impression ; for the eye is gradually drawn upwards towards the central culminating dome (p. 225 B). The Early Christian church, because of the vista of columns, entablatures, and simple timber roof, gives a horizontal impression ; for the eye is led along these horizontal lines to the apsidal sanctuary which is the important feature (p. 209 B).

B. **Walls.**—The walls were usually constructed of brick and internally encrusted with rich coloured marbles and shining glass mosaics, which swept from wall to arch and arch to vault almost to the exclusion of mouldings and sculptured ornament. In this lavish application of colour to a flat surface all the oriental love of magnificence found full expression. Externally the walls were comparatively plain and depended largely for effect on the brilliant oriental sunshine which clothed them with a garment of glowing colour. The façades were often thrown into prominence by alternate layers or bands of brick and stone, reminiscent of the strata of a quarry (pp. 225 A, 234 D, E). This simple device further accentuated the connection of the building with the ground in which it had its foundations.

C. **Openings.**—Arcades of semicircular arches on monolithic columns with convex capitals were largely employed in churches, especially to support the galleries (p. 225 B). Doors are usually spanned by semicircular arches (p. 232 A), but flat, segmental, and horse-shoe arches were also used. Windows, similarly spanned, are small and grouped together (p. 225), while sometimes they are arranged in tiers within the semicircular arch beneath the dome. The encircling ring of windows at the base of the dome or in the " drum " upon which the dome was raised was often the chief source of light in the church (p. 225 B). The problem in the East was to exclude rather than to admit light, and windows were therefore small, so as to make the interior restful and cool, in welcome contrast to the external glare of the Eastern sun, and consequently large unbroken wall spaces were available for brilliant mosaic pictures. Windows were also occasionally formed of a thin frame, 3 ins. thick, of translucent marble, filled in with glass (p. 240 K) and creamy, golden-hued alabaster which the brilliant sunshine wrought into colour like stained glass. The Gothic architects of Northern Europe, where large windows were necessary owing to dullness of the climate, adopted a translucent scheme of decoration by means of painted glass pictures in the large traceried windows instead of sheathing their walls with mosaics.

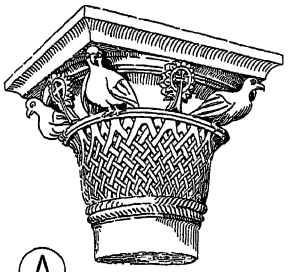
D. **Roofs.**—The method of roofing was by domes of brick, stone, or concrete, often with no further covering (pp. 223, 224, 234). In S. Sophia the vaults are covered with sheets of lead, a quarter of an inch thick, fastened to timber laths resting on the vaults. Hollow earthenware jars were sometimes used in order to reduce the thrust on the supporting walls, as at S. Vitale, Ravenna (p. 231 D). The Byzantines practised the system of placing the dome over a square or octagon by means of pendentives (p. 223 M), which had only been employed tentatively by the Romans, as in the Minerva Medica, Rome (p. 231 B). Domes are of three types : (i) Simple, (ii) compound, (iii) melon-shaped (p. 223). In the simple type of dome, pendentives and dome were part of the same sphere. A good idea of this type is obtained by halving an orange, cutting off four slices, each at right angles to the last, to represent the four arches and then scooping out the interior ; the portion above the crown of these semicircles is the dome and the intervening triangles are the pendentives. Such a form of dome is, however, rare, and perhaps the only example in Europe is that over the Tomb of Galla Placidia (p. 223 B, C). The compound type of dome gives greater height and was



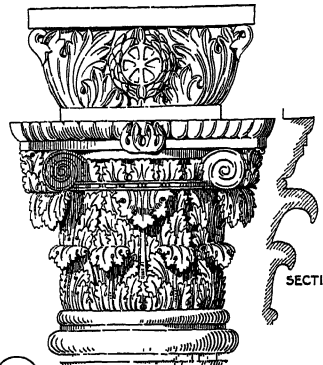
A. S. Irene, Constantinople



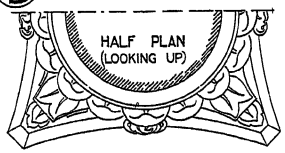
B. S. Vitale, Ravenna, with Tomb of Galla Placidia in foreground



A BIRD AND BASKET CAPL
S.SOPHIA: CONSTANTINOPLE

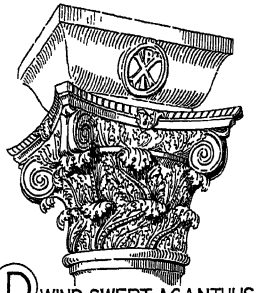


B CAPITAL: ESKI-DJOUMA

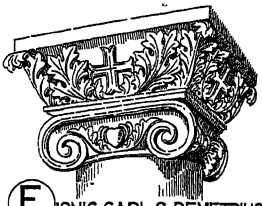




C CUSHION CAPL
S.VITALE : RAVENNA



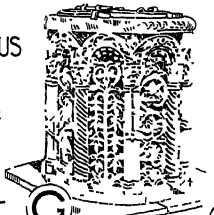
D WIND-SWEPT ACANTHUS



E IONIC CAPL: S.DEMETRIUS:
THESSALONICA



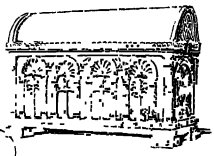
F SILVER BRIDAL CASKET
OF PROJECTA: ROME



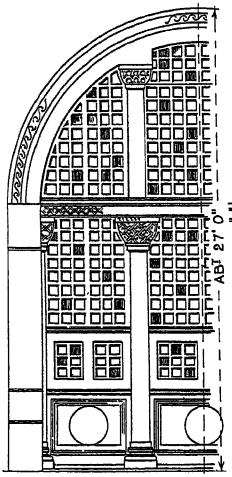
G WELL HEAD: VENICE

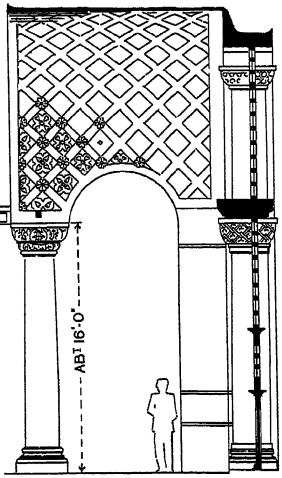


H PARAPET: TORCELLO

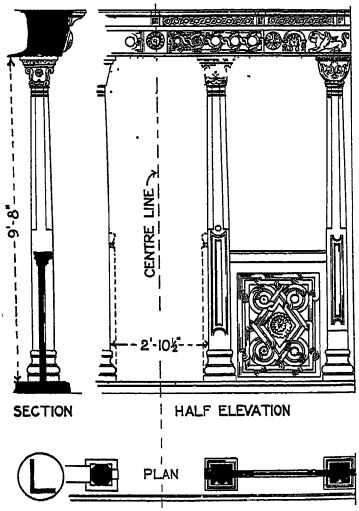


J MARBLE SARCOPHAGUS
RAVENNA





K HALF ELEVATION SECTION
WINDOW IN GALLERY: S·SOPHIA: CONSTANTINOPLE



L SCREEN TO BEMA: S.LUKE OF STIRIS

of two varieties, in the first of which the dome ceased to be part of the same sphere as the pendentives, but rose independently above them (p. 223 D), and in the second the dome was raised on a high drum pierced with windows (p. 223 E). The melon-shaped type of dome consists of convolutions, as in S. Theodore and SS. Sergius and Bacchus, which avoided the necessity for pendentives (p. 223 F, K).

E. **Columns.**—Columns were used constructively, but were always subordinate features and generally introduced to support galleries, as massive piers and walls supported the superstructure (p. 223). In the first instance, columns were taken from ancient buildings, but these were not so numerous in the East as in the neighbourhood of Rome, and therefore the supply was sooner exhausted. This provided an opportunity for designing monolithic shafts. For capitals, the Roman Ionic (p. 240 E) and Corinthian and Composite types (p. 240 B, D) were sometimes used, but from these was derived a new cubiform type with convex sides (p. 240 C), suited to carry a rising arch, which took the place of the horizontal entablature, and this resulted in the gradual disuse of the Roman "Orders" of architecture. Over each type was frequently placed a deep abacus or "dosseret-block," which was probably the survival of the then obsolete Classic entablature and also performed the function of enlarging the surface of the capital to support the voussoirs of the arch (p. 240 C, D, E). These capitals were carved with incised foliage of sharp outline with drilled eyes between the leaves, all contained within the general outline of the capital (p. 240 C). An effective type is the bird-and-basket capital (p. 240 A) from S. Sophia, Constantinople.

F. **Mouldings.**—Mouldings were little used because the marble and mosaic wall linings ran continuously over the surface of walls and arches. Internally, decorative panels of marble and mosaic were sometimes framed in billet mouldings, probably derived from the Classic dentil course, and flat splayed mouldings, with incised ornament, were also used (p. 223 L). Externally the simple treatment of walls in flat expanses of brickwork, with occasional stone banded courses, did not leave the same scope for mouldings as in other styles. Flat stone bandings flush with the wall surface were used instead of string courses and cornices (p. 234 D, E).

G. **Ornament.**—The scheme of ornamentation was elaborate in the extreme, for internal walls were lined with costly marbles with veining carefully arranged to form patterns, while vaults and upper walls were sheathed with glass mosaic pictures of symbolic figures, groups of saints, the peacock as the emblem of immortal life, the endless knot as the emblem of eternity, and the sacred monogram of Christ—all forming a striking contrast to the less permanent painted frescoes of Romanesque churches (p. 250). Byzantine pavements of many-coloured marbles and mosaics were carried out in great variety of patterns, such as "opus sectile" and "opus Alexandrinum," and thus the general colour-scheme was carried throughout the church over floor, walls, arches, and vaults. Mosaic in small cubes was used broadly as a complete lining to brick structures, and mouldings were replaced by decorative bands in the mosaic. One surface melts into another as the mosaics creep from wall, arch, and pendentive to the dome, while one universal golden background gives unity of effect to the whole surface. Greek rather than Roman technique was followed in the carving, on account of the Greek origin of Byzantine craftsmen. A special character of the carving was due to the use of the drill instead of the chisel. The acanthus

leaf, deeply channelled and of V-shaped section, was adopted from the Greek variety, but became more conventional in treatment with acute-pointed leaves drilled with deep holes at the springings (p. 240 D, E). The great characteristic of Byzantine ornament as compared with Classical is that the pattern is incised instead of raised and was cut into the surface without breaking the general outline. The bridal casket of Projecta (p. 240 F), the marble sarcophagus (p. 240 J), the well-head from Venice (p. 240 G), and the parapet panel (p. 240 H) are all typical examples of Byzantine art and show the close alliance between architecture and subsidiary arts. The screen to the bema of S. Luke of Stiris (p. 240 I), with its cubiform capitals and unending knot ornamentation, is an example of church fittings. Figure sculpture was not allowed by the Greek Church, as it was held to savour of idolatry, and so this was an additional reason for the Byzantine type of decoration which expressed itself in flat-coloured pictures and not in raised sculptured figures. In their own special way these Byzantine artists, with their miracles of colour effects, rivalled even the artists of Old Greece, whose sculpture stands unchallenged through all ages.

It was as well for the fame of Byzantine art that it had no chance of entering into rivalry with the art of Greece. It was compelled to seek another form of expression, and this necessity gave rise to the wonderful mosaic pictures which clothe Byzantine churches in the glowing beauty of surface decoration.

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EUROPE ABOUT A.D.1100

ROMANESQUE ARCHITECTURE IN EUROPE

1. INFLUENCES

i. Geographical.—On the decline of the Roman Empire, the Romanesque style grew up in those countries of Western Europe which had been under the rule of Rome, and geographical position determined many of the peculiarities of the style in each country. Apart from its Roman origin, from which it took its name, the Romanesque style owed something to Byzantine art, which was carried westwards along the great trade routes, by way of such centres as Venice, Ravenna, and Marseilles, and thus exercised a formative influence on Romanesque, especially in certain districts, as will be seen in later chapters.

ii. Geological.—The use of local materials, whether stone or brick, marble or terra-cotta, as well as of ready-made columns and other features from old Roman buildings, accounts for many of the varying characteristics in each country over this wide area, with its different geological formations.

iii. Climatic.—Climatic conditions also contributed to differences of treatment north and south of the Alps and Pyrenees. In the duller climates of the north, window openings were enlarged to admit sufficient light, while in the south they were kept small to exclude the dazzling sunshine. The slope of roofs was also largely determined by climate ; and it will be seen that the flat roofs of the south gave way to the high-pitched roofs in the north to throw off rain and snow.

iv. Religious.—Christianity, the chief source of education and culture,

was gradually extending throughout northern Europe, and the erection of a church often resulted in the foundation of a city; for the Papacy had been rising to great power and influence, and rivalled, or even controlled, such civil government as existed. The "Pragmatic Sanction" (A.D. 554) had already conferred authority on bishops over provincial and municipal governments, and this had increased the power of the Church, which now often nominated public officials. Bishops and abbots were also, by reason of their feudal rank, military chiefs who sometimes took the field in person, and thus the Church was everywhere predominant. Religious enthusiasm and zeal found their material expression in the magnificent cathedral churches and monastic buildings, which were an even more characteristic outcome of this period than were the castles of feudal chiefs. This same religious fervour led to the Crusades against the Saracens who had overrun Palestine and taken the Holy Places, and this long-continued warfare (A.D. 1096–1270) between Christians of the West and Mahometans of the East was not without its effect on Western art. Monastic communities had come into existence as early as the sixth century, and were fostered by Charlemagne, but the eleventh century was remarkable for that great development of the Monastic system which gave an impulse to civilisation, promoted new methods in agriculture, and exercised its influence on architecture; indeed, until the middle of the twelfth century, science, letters, art, and culture were the monopoly of the religious Orders. The schools attached to monasteries trained youths for the service of religion; monks and their pupils were often the designers of cathedrals, and up to the thirteenth century architecture was almost regarded as a sacred science. (For a description of the typical plan of a monastery see p. 248.)

The chief Monastic Orders were as follows:

(1) The Benedictine Order was founded during the sixth century in South Italy by S. Benedict, who decreed that architecture, painting, and all branches of art were to be taught. All the older monasteries in England, including those of Canterbury (p. 340) and Westminster (p. 344), belonged to this Order. The usual arrangement consisted of a square cloister having on one side an aisled church of cruciform plan, a transept of which bounded one side of the cloister. The refectory was generally on the opposite side parallel to the nave, while the dormitory was on another side with a stair to the church for night services. The original plan preserved in the library of the Monastery of S. Gall, Switzerland, is a record of the typical plan of buildings of this Order (p. 293).

(2) The Cluniac Order was founded A.D. 909 with the celebrated Abbey of Cluny as headquarters. The plan had double transepts, a feature adopted in many English cathedrals, as Lincoln (p. 332 F) and Salisbury (p. 332 E).

(3) The Cistercian Order was founded A.D. 1098 at Cîteaux, Burgundy. The typical church was divided transversely into three parts by screens, walls, or steps, and there were often no aisles, while the transepts and eastern arm of the cross were short, so that the choir extended westward of the transepts. There was an absence of towers and painted glass. The Cistercian influence extended to various countries of Europe, and in England the Abbeys of Furness, Fountains (p. 355), Roche, and Kirkstall belonged to this Order.

(4) The Augustinian Order differed little from the Benedictine and was introduced into England in A.D. 1105. Bristol, Carlisle, and Oxford Cathedrals, also S. Bartholomew the Great, London, were founded by this Order.

(5) The Premonstratensian Order was instituted at Premontré, Picardy (A.D. 1119). Castle Acre Priory and Bayham Abbey are examples of their monastic buildings in England.

(6) The Carthusian Order was founded by S. Bruno about A.D. 1080. The Grande Chartreuse, near Grenoble, is the French headquarters, and other monasteries of this Order were at Vauvert, Clermont (Auvergne), besides the Certosa near Florence, the Certosa near Pavia (p. 500), and the Charterhouse, London. Two churches were usually provided, one for the monks and the other for the people. The typical feature was the great rectangular cloister, surrounded by an arcade on to which opened the monks' cells, which were self-contained and had their own gardens. By the rules of the Order, speech was interdicted, and the Carthusians had to work, eat, and drink in solitude, and such a regime explains the original severity of their architecture.

(7) The Military Orders included the Knights Templars and the Knights Hospitallers, or Knights of S. John. Their churches were circular in plan and are supposed to have been on the model of the Rotunda of the Holy Sepulchre, Jerusalem (p. 207). The Temple Church, London (p. 320), and those at Cambridge, Little Maplestead, and Northampton were founded by these Orders.

(8) The Friars (*Fratres, Frères*, hence Friars), of which there were several Orders, were of later origin, and their churches were large, plain, and without aisles, designed for preaching. (*a*) The Dominicans (preaching or Black Friars) were founded by S. Dominic about A.D. 1170, and came to England about A.D. 1217. Fra Angelico was the best-known member of this Order, which held a high place in Christian art. (*b*) The Franciscans (mendicant or Grey Friars) were founded by S. Francis of Assisi, A.D. 1209, and came to England A.D. 1224. Roger Bacon was one of the most distinguished members of this Order, which was noted for intellectual attainments. (*c*) The Carmelites (White Friars) were expelled from Mount Carmel by the Saracens (A.D. 1098), but only came to England A.D. 1229. (*d*) The Austin Friars (or Hermits). (*e*) The Friars of the Holy Trinity, instituted A.D. 1197. (*f*) The Crutched (or Crouched) Friars, instituted in Bologna A.D. 1169.

(9) The Jesuits were established as a counterforce to the Reformation, and they came to England about A.D. 1538.

v. Social.—The introduction of the system of feudal tenure, or the holding of land on condition of military service, caused important changes in the social and political organisation of states; for through its operation the class of actual slaves died out, but at the same time the poorer freemen degenerated into serfs, bound to the land and passing with it on a change of ownership. As civilisation advanced the towns grew in importance, but constant warfare rendered the condition of the people unsettled and craftsmanship was consequently at a low ebb. Each country, as will be seen later, had its special social conditions which affected architecture, while in the days of its greatest prosperity the monastic system played an important part in the life of the people of all countries, especially in rural districts before the establishment of hospitals, and when all learning, even of medicine, was monopolised by the Church. Freemasons, owing to their knowledge of building and by reason of privileges gradually acquired, did much to facilitate the building of churches.

vi. Historical.—The Roman Empire in the West had already come to an end in A.D. 475. The election of the first Frankish King Charlemagne (A.D. 799) as Holy Roman Emperor marks the beginning of a new era. From

the fall of the Roman Empire till the time of Charlemagne few buildings had been erected, but he gathered artists and craftsmen around him, and before his death (A.D. 814) he had, in a great measure, restored the arts and civilisation to Western Europe. For the next two hundred years little progress was made, and it has been suggested that this was owing to a popular superstition that the millennium would bring the end of the world. After this period buildings sprang up which, with their local peculiarities, will be noticed under each country; but change was slow, as traditional forms were first modified in design and detail, and new features were only added later. Nearly all the nations of Europe had by this time struggled into existence. France, Germany, and Spain were becoming powerful enough to begin to set aside the rule of the Holy Roman Empire, which was afterwards little more than a title. Denmark, Sweden, and Norway were distinct kingdoms, and at the end of the eleventh century England had been welded into one by William the Norman.

2. ARCHITECTURAL CHARACTER

The term Romanesque may be said to include the phases of European architecture which were based on Roman art from the departure of the Romans up to the end of the twelfth century, when the pointed arch was introduced, and this general survey of the style is given before treating of the development in each country, viz. in Italy (p. 251), France (p. 270), Germany (p. 288), and England (p. 311). After the Imperial rule of Rome had passed away, her genius still asserted itself in the architecture of the new states and gave it all a certain similarity, until each country developed its own style. Certain districts of Europe fell specially under the influence of Byzantine art, which was itself partly derived from Rome, but which, as East and West drifted apart, had assumed a special character. Western European architecture exhibiting Eastern influence in a paramount degree is classified as Byzantine. To appreciate the character of Romanesque architecture, we must form a mental picture of the conditions of Europe during the period known as the Dark Ages. We must imagine the remains of an ancient civilisation, vast in extent and uniform in character, no longer regulated by Roman law and no longer protected by Roman power. Its former glory was now recognisable only by the multitude of its monuments; some were still intact, others were injured or partially destroyed, most were unused, and all were alike unguarded and neglected. This is the Rip Van Winkle period of European architecture. We next see Europe rising like a strong man from the lethargy of a long sleep. He yawns, rubs his eyes, stretches his giant limbs, shakes off his slumber, and stumbles to his feet to look out again upon the work-a-day world and the treasures scattered around. He finds himself surrounded by the achievements of a proud past, and as he becomes conscious of his own needs he realises the possibilities of the present. Then with dazed eyes and groping hands he collects these treasures of art and applies them to his daily needs. From the ruins of mighty edifices, he gathers fragments of hewn stone, carved capital and sculptured frieze, and places them together, with monoliths of porphyry and marble, upon old foundations to construct some building of service to himself. Thus, by a gradual discovery and understanding of the uses of these old fragments, did he succeed in adapting them to new needs, and thus was a new art founded on the old. Here we have indeed "new lamps for old." In this way the birth of Romanesque architecture may be explained, for the ruins of ancient buildings served as the

quarry for the new, and necessarily determined the character, both of construction and decoration, in proportion to the extent to which old features were employed.

The later Romanesque style of the tenth to the twelfth century was remarkable for the tentative use of a new constructive principle. This was the application of the principle of equilibrium to construction, in strong contrast to that of inert stability as used by the Romans. This new system, which was accompanied by the use of dressed stones of comparatively small size connected by thick beds of mortar, led in the thirteenth century, after many tentative experiments, to the full development of the Gothic system of architecture, in which elasticity and equilibrium were jointly employed in the erection of the magnificent Gothic cathedrals. The general architectural character is sober and dignified, while picturesqueness depends on the grouping of towers and the projection of transepts and choir. It will be seen that in Italy, France, England, and Germany exceptional tendencies were brought about by local conditions, but in all these countries the special character largely depends on the employment of vaulting, based on Roman methods.

Roman cross-vaults (pp. 302, 303) were used throughout Europe till the beginning of the twelfth century, when they were gradually superseded by "rib and panel" vaulting, in which a framework of ribs supported thin stone panels. The new method consisted in designing the profile of the ribs to which the form of the panels was adapted; whereas in Roman architecture the shape of the vault itself determined the groin, which was formed by the intersection of the vaults. Romanesque architects therefore first decided the profile of the transverse, longitudinal, and diagonal ribs, which latter, as groins, had previously been settled naturally by the intersection of the vault surfaces; this arrangement produced the quadripartite (four-part) vault. If the cross-vaults were semi-cylindrical the diagonal groin would be a semi-ellipse (p. 302 D), but Romanesque architects did not resort to the use of ordinates as was afterwards done in the Renaissance period, but surmounted the difficulty arising from the different spans of diagonal and transverse ribs in various ways. In France and Germany the vaulting ribs of a square vaulting compartment were usually semicircular curves starting from the same level; therefore the diagonal rib, having the longest span, rose to a greater height than the transverse and longitudinal ribs, and when the panelling was filled in on the top of these ribs each vault was domical (p. 302 G). In England vaults were generally constructed with continuous level ridges, instead of in this domical form, and the difference in height between diagonal and transverse ribs in a square vaulting compartment was equalised by "stilting" the latter or by making the diagonal rib a segment of a larger circle than that of the longitudinal and transverse ribs, which were semicircular as explained on the illustration (p. 302 G). In vaulting an oblong compartment the difference between the heights of diagonal and transverse ribs was still greater than in a square compartment and produced an awkward waving line of the ribs on plan (p. 303 B), but Romanesque architects made little attempt to vault any but square compartments. At Worms (p. 292 J), Mayence, and Spires the difficulty of vaulting oblong compartments of the nave was partially surmounted by including two of them to make one square bay of vaulting, each corresponding with two square compartments of the side aisles. In some instances, as in the Abbaye-aux-Hommes (p. 276 D) and Abbaye-aux-Dames at Caen, Notre Dame, Paris, and at Canterbury (p. 333 B), the intermediate pier

was carried up as a vaulting shaft to support a rib which altered the quadripartite vaulting compartment into six parts, known as " sexpartite " vaulting (p. 302 E). The main piers were usually more massive than the intermediate because they supported the chief weight of the vaulting. The difficulty of equalising the height of ribs of different spans, especially in oblong compartments, was finally surmounted by the introduction of the pointed arch in the Gothic period (p. 302 G), when the system of " rib and panel " vaulting was further elaborated by the addition of various supplementary ribs (p. 306).

3. EXAMPLES

Examples of various buildings, such as cathedrals, churches, and castles, are given under their respective countries ; but as the monastic system was responsible for a new departure, necessitated by the requirements of monkish communities, a sketch of a typical Benedictine monastery is given to convey an idea of the monastic establishments which sprang up during the period in different European countries. Dr. Jessop, in the " Daily Life of an English Monastery," gives a vivid description of the life and varied pursuits of the monks, which not only helps us to realise the disposition, uses, and extent of the various buildings in a conventual establishment, but also shows the important rôle played by monasteries in the social system of the Middle Ages. They formed indeed the connecting link between the ecclesiastical hierarchy on the one hand and the secular life of the people on the other. These monastic settlements were important factors in the development of Mediæval architecture.

The monks followed different pursuits according to the Order to which they belonged (p. 244). The Benedictine was the chronicler and most learned of all monks ; the Augustinian was the preacher and given to disputations ; the Cistercian was the recluse and interested in agricultural pursuits ; the Cluniac was the student and artist ; and the Carthusian was the ascetic. The Friars were the missionary preachers of a later period (p. 245).

A plan has been preserved of the Benedictine Monastery of S. Gall, Switzerland (p. 293), which shows that a complete conventual establishment, like Westminster Abbey (p. 354 H) or Fountains Abbey (p. 359), consisted of a group of buildings designed for all occupations, both spiritual and temporal, of the monks, and resembled a village with the monastic church as the centre. The monastic group was planned to include the following essential departments : (*a*) The Monastic Church, situated in a court or Close open to the public. (*b*) A Cloister Court off which were the chapter house, sacristy, and dormitory with its staircase into the church, while the cellarage for beer, wine, and oil was often under the dormitory. The refectory and kitchens, with their noise and smell, were on the side of the cloister away from the church. The lavatory was usually in the south cloister walk, as at Westminster, Wells, Chester, Peterborough, and Gloucester. (*c*) An Inner Court with infirmary, guest house, kitchen, servants' hall, library, and the scriptorium for writing and illuminating. (*d*) A Common Court, approached through a gateway for carts, and surrounded by granaries, bakehouses, stables, store-rooms, servants' rooms, tribunal, prison, abbot's lodging, and barn. (*e*) Mills, workshops, gardens, orchards, and fish ponds completed the monastic settlement. Monasteries served the purpose of inns in little-frequented places, as is the case to this day in some districts on the continent. The plans of some monastic establishments differed in certain details from

this description of a Benedictine Monastery, as we have seen in dealing with the influence of religion.

Another development was the circular church, as distinct from the circular baptistery. From early Christian baptisteries, modelled on Roman circular temples and tombs, were evolved a few circular churches. In Italy, where the church plan was similar to that of the Roman basilica, the baptistery stood alone, but in France circular churches were sometimes built, and, when it was necessary to enlarge them, the circular building was retained as the sanctuary, a rectangular nave being added for the use of the people. The Germans also built circular churches, and then added rectangular sanctuaries for the priests (p. 290). In England circular churches were introduced by the Knights Templars in imitation of the Rotunda of the Holy Sepulchre, Jerusalem (p. 207), and they are the Temple Church, London (p. 320), S. Sepulchre, Cambridge, and the churches at Little Maplestead and Northampton.

4. COMPARATIVE ANALYSIS

A. **Plans.**—The Roman basilica had been the model for Early Christian churches, the plan of which was subject to new developments during this period. The addition of transepts and the prolongation of the sanctuary or chancel made the church a well-defined cross on plan, as at S. Michele, Pavia (p. 260 E). Transepts were generally the same breadth as the nave, which was usually twice the width of the aisles. The choir was often raised on piers above the level of the nave and over a vaulted crypt, in which saint or martyr had been buried, as at S. Miniato, Florence (p. 259 B) and S. Michele, Pavia (p. 260 A). In later churches aisles were sometimes carried round the chancel to form an ambulatory. Cloisters in connection with monastic churches are often very elaborately treated with twisted columns, carved capitals, and sculptured arches. Towers, square, octagonal, or circular, are prominent features at the east and west ends and over the crossing of nave and transepts, as in the Church of the Apostles, Cologne (p. 291 C), and they often rise to a great height in well-marked stages, pierced with windows.

B. **Walls.**—Roman methods of craftsmanship still influenced constructive art in Europe, but technical skill in general was at a low ebb. Walls were roughly built, and were relieved externally by buttresses formed as pilaster strips and connected at the top by bands of horizontal mouldings, or by a series of semicircular arches on corbels (pp. 291 C, 285 C). Attached columns, with rough capitals supporting semicircular arches, formed wall arcading, which was a frequent decorative feature (p. 285 G).

C. **Openings.**—Arcades consisted of massive circular columns or piers which supported semicircular arches, as in the naves of Norman cathedrals (p. 336 B). Door and window openings are very characteristic, with jambs or sides formed in a series of receding moulded planes known as " orders," in which are circular shafts surmounted by a continuous abacus. The semicircular arch above was also constructed in receding concentric rings (p. 267 B), which followed the lines of the recesses below. A rose or wheel window was often placed over the principal west door, as at S. Zeno Maggiore, Verona (p. 265 A), and in South Italian churches, as at Palermo.

D. **Roofs.**—The general employment of vaulting in the eleventh century, especially over side aisles, may have been due to the desire to fire-proof the building, although the central nave often had only a simple wooden roof.

The form of arch employed in vaulting as elsewhere was semicircular, often raised or "stilted" (p. 302 C). Unmoulded ribs were first used about A.D. 1100, and later on they were moulded quite simply. Intersecting barrel or cross-vaults (p. 324 A) were usual over a square plan, but the difficulty in constructing these over oblong bays finally led to the use of pointed arches in the Gothic period (p. 302 G). When the crossing of nave and transepts was crowned by an octagonal dome, four of its sides were carried on "squinch" arches (p. 260 A, D). Romanesque architects began to use flying buttresses under the aisle roofs to counteract the thrust of a vaulted nave roof (p. 276 C); but it was left for Gothic architects to place these flying buttresses outside the aisle roof and to weight them with pinnacles.

E. **Columns.**—Columns were either cylindrical and of stumpy proportions or formed as massive piers, and the shafts were treated with flutings of vertical, spiral, or trellis form, or sometimes carved with ornament (p. 336 B). Variations of Corinthian or Ionic capitals are used, as in S. John's Chapel, Tower of London (p. 413 A), and elsewhere (pp. 268 E, F, 286 C, G), and in later times the capital was often of a cushion (cubiform) shape, as also in S. John's Chapel, Tower of London (p. 364 C), and Winchester (p. 410 C), and is sometimes richly carved and scalloped (p. 410 B, D, E).

F. **Mouldings.**—These were often elaborately carved, as will be seen in English Romanesque (Norman) architecture (p. 415). The base of the column is generally an adaptation of the old Attic form, but the circular moulding often projects over the square plinth below, at the angles of which flowers or animals were occasionally carved to fill up the triangular part (p. 410 H). The abacus above the capital (p. 410 E) is distinctive in form; it is higher, but projects less than in the Classical column and is moulded with alternate fillets and hollows.

G. **Ornament.**—Ornament, into which entered vegetable and animal forms, was treated conventionally, and carving and sculpture were often rough (pp. 268, 286, 296, 415). For interiors, frescoes were more usual than mosaics, which had been such a feature of Early Christian churches, while stained glass was as yet little used. Ornament, like all other features, was affected by various influences which are referred to in the chapters special to each country.

5. REFERENCE BOOKS

See list under each country: Italy (p. 269), France (p. 284), Germany (p. 297), and England (p. 426).



ITALY IN THE 10TH CENTURY

ITALIAN ROMANESQUE

1. INFLUENCES

i. Geographical.—The long, narrow peninsula of Italy stretches from the snowy Alps on the north, right down through the waters of the Mediterranean, almost to sultry Africa on the south. These geographical variations were accompanied by other differences which influenced the architecture in such varying degrees that it may be most conveniently considered under (*a*) Central Italy, within the inner zone of Roman influence; (*b*) Northern Italy, in contact with Western Europe; (*c*) South Italy and Sicily, open to influences from the East.

(*a*) Central Italy.—The central region lies between Florence, commanding the passage of the Arno, on the north; Pisa, the maritime power on the west; and Naples, the naval port on the south; while the Imperial City, rich in ancient pagan monuments and Early Christian churches, here exercised a paramount influence on architecture. (*b*) North Italy.—Milan, the capital of Lombardy, enjoyed great prosperity on account of its proximity to several Alpine passes and its situation in the fertile plains of Lombardy, where the cultivation of the vine and mulberry was then, as now, a staple industry. Venice and Ravenna, which were connecting trade links between East and West, fell geographically under the influences of Byzantine art. (*c*) South Italy and Sicily.—South Italy, including Calabria, was by position specially susceptible to influence from the East, and, after having been a Greek and Roman colony, it formed part of the Byzantine Empire

under Justinian. Sicily, an island which is triangular in form, is situated in the Mediterranean sea, and, facing Greece on one side, Italy on another, and North Africa on the third, was exposed to influences from all three countries.

ii. Geological.—(*a*) Central Italy.—Tuscany possessed great mineral wealth and an abundance of stone. Various building materials were used in Rome, including bricks, volcanic tufa or peperino, travertine stone from Tivoli and marble from Carrara, Paros, and other Greek islands. Much material was also obtained from the ruins of Classic buildings. (*b*) North Italy.—The low-lying plains of Lombardy supplied clay for making bricks, which, used with marble from the hills, gave a special character to the architecture. Venice on the Adriatic imported marbles in her merchant vessels. (*c*) South Italy and Sicily.—The mountains of South Italy and Sicily supplied calcareous and shelly limestone as well as many kinds of marble, while the sulphur mines, especially of Sicily, largely contributed to that prosperity which was conducive to building enterprise.

iii. Climatic.—(*a*) Central Italy.—The brilliant sunshine demanded, as in the Roman period, small windows and thick walls, both in cities of the plain and in cities built on the hill-tops, both for defence and to be above the miasma of the low-lying country. The climate not only varies from north to south, but also from east to west according to the proximity to the Apennines, which are often snow-clad, or to the sea-board. (*b*) North Italy.—The climate resembles that of Central Europe, and varies between extremes of heat and cold. The towns from Milan on the west to Venice on the east lie below the Alps, and thus in the winter they are swept by the ice-winds from the mountains; while in the summer these same mountains protect them from the north winds, when the heat in the plains is often excessive. (*c*) South Italy and Sicily.—The climate is almost sub-tropical; palms grow in the open air and the orange and lemon groves of Palermo are famous. On the southern coasts of Italy buildings have the flat roofs and other characteristics of Oriental cities.

iv. Religious.—(*a*) Central Italy.—During this period the Popes, although they had only small temporal dominions, began to be a power in civil government, and thus started opposing policies and rival factions. Pepin, King of the Franks, sided with Pope Stephen II against the Lombards and restored to him Ravenna, the chief city of the Exarchate. In A.D. 755 Central Italy became independent under the Pope, and so inaugurated the temporal power of the papacy. Then Charlemagne, invited by Pope Adrian I (A.D. 772–779), advanced into Italy in A.D. 773, defeated the Lombards and entered Rome for the first time, in A.D. 774. He bestowed the Dukedom of Spoleto on Pope Adrian, and thus added to his temporal power, while the wealth of the Church rapidly increased, and from this period the papal connection with Byzantium was broken off. The decisions of Gregory VII (A.D. 1073–87) that the clergy should not marry, and that no temporal prince should bestow any ecclesiastical benefice, resulted in the long struggles between Guelphs and Ghibellines (pp. 253, 498). (*b*) North Italy.—The Emperor Theodosius had, in Early Christian times, been forced to do penance for the massacre in Thessalonica, and S. Ambrose, Bishop of Milan (A.D. 374–398), closed the church doors against him. This is significant of the great power the Church had acquired. The influence of S. Ambrose had been sufficient to establish the Ambrosian ritual, which introduced more metrical chanting into the service, and, owing to his fame, it was long maintained in Milan instead of the Roman liturgy. The power, both spiritual and temporal, of the arch-

bishops of Milan, especially under Aribert (A.D. 1018–45), was firmly established by their espousal of the people's cause and their stand for popular rights against the Lombard kings. (*c*) South Italy and Sicily.—Under Mahometan rule (A.D. 827–1061), which reached Sicily from North Africa, even church façades were ornamented with geometrical patterns, because the Mahometan religion forbade representations of the human figure (p. 831).

v. Social.—(*a*) Central Italy.—The artistic activity of Tuscany in the eleventh century showed itself chiefly in architecture, which provided a suitable setting for the daughter arts of painting and sculpture. The growth of an industrial population, the increase of commerce, and the rise of ruling families promoted the foundation of independent and fortified cities, such as Pisa, Lucca, and Pistoia, which were all competitors in architectural achievements. (*b*) North Italy.—The devastating inroads into the North Italian plains led to the gradual rise of the powerful Venetian State ; for the hardy northern traders planted their new colony on the islands of the lagoons. There, safe from serious attacks, they settled on a republican form of government, which afterwards became an oligarchy under a Doge, who was invested with supreme authority. Commerce and art were the special care of the Venetians. They raised glorious buildings in the sea and brought precious freights from the East, even including relics from the Holy Land. Thus did the East triumph in the West through its influence on the buildings of the Queen of the Adriatic. All the free cities, or independent commonwealths of Italy, such as Milan, Pavia, Verona, and Genoa, vied with one another in the beauty of their public buildings, and this spirit of rivalry gave life and vigour to architecture. (*c*) South Italy and Sicily.—The Mahometans introduced into Sicily valuable commercial products, such as grain and cotton. Civilisation there had been, however, considerably aided by Byzantine influences. The traditional use of mosaic in decoration was fostered by the Norman kings who established a school of mosaic at Palermo. Southern Italy, which always maintained a close connection with Sicily, has yet to be fully explored for traces of its architectural development.

vi. Historical.—(*a*) Central Italy.—Pisa, like Genoa in the north and Amalfi in the south, sent merchant fleets to the Holy Land for the Eastern Fair at Jerusalem, and thus were the Pisans brought into contact with Eastern art. At the commencement of the eleventh century Pisa was the rival of Venice and Genoa as a great commercial and naval power, and took the lead in the wars against the infidels, defeating the Saracens in A.D. 1025, 1030, and 1089 at Tunis. The Pisans also captured Palermo in A.D. 1062, and this contact with the Saracens probably accounts for the characteristic Pisan use of striped marbles. The Pisans were defeated by the Genoese in A.D. 1284, and this was the beginning of their decline. The rise of Florence dates from A.D. 1125, when the inhabitants of Fiesole moved there, owing to the destruction of their city, and in the following century Florence rivalled Pisa in commerce. Lucca, another important city during this period, was rent by the feuds of the Guelphs, supporters of the Popes, and the Ghibellines, who sided with the Emperors. This dual influence is traceable in architectural features of the city, such as battlements of castles and fortifications. (*b*) North Italy.—The close alliance which Venice kept up with Constantinople increased the commercial and naval importance of the sea-state so that, by the end of the eleventh century, her trade extended beyond Dalmatia, Croatia, and Istria to the Black Sea and the Mediterranean coasts. In spite of the intervening Alps, the invaders who had occupied the valley

of the Po kept up commercial communications with those on the Rhine, by means of the Alpine passes; so that Milan in the plains of Lombardy was subject, then as afterwards, to German influence in art, but the old Roman influence reasserted itself in the eleventh and twelfth centuries which witnessed great building activities in Lombardy. (*c*) South Italy and Sicily.—In A.D. 827 the Mahometans landed in Sicily and gradually overran the island, which had formed part of the Byzantine Empire. The latter part of the tenth century was the most prosperous period of their sway, but sanguinary religious struggles ended in the downfall of the Mahometan dynasty. From A.D. 1061 to 1090 the Normans, under Robert and Roger de Hautville, were engaged in the conquest of the island, and in A.D. 1130 a descendant of the latter was crowned at Palermo. During the succeeding years Sicily was again prosperous, as may be judged by the number and beauty of the buildings of this period, and her fleet was powerful enough to defeat the Arabs and Greeks.

2. ARCHITECTURAL CHARACTER

The Romanesque Period in Italy may be taken to date approximately from the eighth to the twelfth century.

(*a*) ***Central Italy.***—The basilican type of church was closely adhered to during this period; for Italians were slow to adopt a new system of construction and preferred to concentrate on beauty and delicacy of ornamental detail, while the architectural character was much governed by Classic traditions. The most pronounced features of façades were the ornamental arcades which rose one above the other, sometimes even into the gables (pp. 257 A, 258). This decorative use of arcaded galleries is one instance of the employment of an architectural feature having a constructive origin. When a wooden roof was placed over a vault there was no need to continue the solid external walls above the springing of the vault, as wooden rafters exerted little thrust (p. 215 J); hence this upper portion of the wall could be pierced or arcaded (p. 267 E, G), and this arcading came to be employed, especially by the Pisans, as a decorative feature, and sometimes even entirely covered the western façade (p. 257 A). In a similar way the battlemented parapet, primarily designed for defence, was used as a decorative feature on window transoms, and elsewhere in English Gothic buildings (pp. 408 M, 366 G, J). The use of marble for facing for walls distinguishes Romanesque architecture in Italy from that of the rest of Europe (p. 259 A). The churches had, for the most part, simple open timber roofs ornamented with bright colouring. Byzantine influence was strong in Ravenna and Pisa, which developed their own peculiar styles. Campanili or bell-towers, which seem to have originated in the sixth century, for carrying the bells which summoned Christians to prayer, now became an integral part of the church group, and henceforward gave special character to ecclesiastical architecture (p. 265 A).

(*b*) ***North Italy.***—Romanesque art in this district shows influence from north of the Alps, where the principal innovation was the development of the ribbed vault which brought about the adoption of many new constructive features. The churches are basilican in type, but naves as well as side aisles are vaulted and have external wooden roofs. Aisles are often two storeys in height, while thick walls between the side chapels act as buttresses to resist the pressure of the vaults. The flat, severe entrance façades stretch across

the whole church, thus masking externally the division of nave and aisles. There is often a central projecting porch, with columns standing on the backs of crouching lions and a rose window above to light the nave (p. 267 J). The gable is characteristically outlined with raking arcades which had originated in the eaves arcades round the apses. The general character became less refined, owing to the increased use of stone and brick instead of marble, and ornament shows a departure from Classic precedent, and portrays, with an element of the grotesque, the rough outdoor life of the invaders from the north. The Comacine masters, a privileged guild of architects and sculptors originating in Como, carried out church building and characteristic decoration during the eleventh century. not only in the north, but also in other parts of Italy, and it is contended that their influence spread even as far as England.

(*c*) *South Italy and Sicily.*—The changing architectural character can be traced through Byzantine, Mahometan, and Norman rule, and each successive period carried with it something from the past. Byzantine influence predominates in the plans of such buildings as the church of the Martorana at Palermo, where the dome, supported on four columns, covers the square central space. Mahometan influence is specially seen in the coloured marble and mosaic decoration of interiors (p. 266 A) and in the use of stripes of coloured marbles externally. The sturdy Norman character is displayed in the construction of the cathedral of Monreale. It is natural that the churches should have either the dome of the Byzantine or the wooden roof of the basilican type, and they are seldom vaulted.

3. EXAMPLES

CENTRAL ITALY

Pisa Cathedral (A.D. 1063–92) (pp. 257, 258 B) with Baptistery, Campanile, and Campo Santo, together form one of the most famous building groups of the world (p. 257 A). The cathedral is one of the finest of the Romanesque period and has a strongly marked individuality. It resembles other early basilican churches in plan, with long rows of columns connected by arches, double aisles, and a nave which has the usual timber roof (p. 257 C). The exterior has bands of red and white marble, and the ground storey is faced with wall arcading, while the entrance façade is thrown into relief by tiers of open arcades which rise one above another right into the gable end. The transepts, with a segmental apse at each end, were an advance on the simple basilican plan. The elliptical dome over the crossing, or intersection of nave and transepts, is of later date (p. 257 D). The building depends for its interest on its general proportions and on the beauty and delicacy of its ornamental features, rather than on any new structural development, such as may be seen in Northern Italy.

The **Campanile, Pisa** (A.D. 1174) (pp. 257, 258), is a circular tower, 52 ft. in diameter, rising in eight storeys of encircling arcades. This world-famous leaning tower, which is the most arresting feature of this marvellous group, has been the subject of much discussion, but there is little doubt that its inclination, which recent measurements proved to be on the increase, is due to subsidence in the foundations. The upper part of the tower now overhangs its base as much as 13 ft. 10 ins., and it thus has a very unstable appearance.

The **Baptistery, Pisa** (A.D. 1153–1278) (pp. 257 A, D, 258, 310 F), was designed by Dioti Salvi, on a circular plan, with a central space or nave, 60 ft. in diameter, separated by four piers and eight columns from the surrounding two-storeyed aisle, which makes the building 129 ft. in diameter. Externally it is surrounded on the lower storey by half-columns, connected by semicircular arches, under one of which is the door (p. 267 K), and above these is an open arcade of small detached shafts. This arcade is surmounted by Gothic additions of the fourteenth century, which disguise the original design. The structure is crowned by an outer hemispherical roof, through which penetrates a conical dome covering the central space (p. 309 F). If there were a lower internal cupola, it would resemble the constructive scheme of S. Paul's, London (pp. 718 C, 724[2]). This Baptistery bears remarkable similarity to the Church of S. Donato (ninth century) at Zara, Dalmatia, in which, however, the central space is only 30 ft. in diameter.

S. Michele, Lucca (A.D. 1188, façade A.D. 1288) and **S. Martino, Lucca** (A.D. 1060, façade A.D. 1204) are very similar in style to the buildings of the Pisan group, because at the time of their erection Lucca had fallen under the power of Pisa.

Pistoia Cathedral (C. A.D. 1150) was also built under the influence of the Pisan school, and with its porch and arcaded façade in black and white marble formed the model for other churches in the city.

The **Cloisters of S. Giovanni in Laterano, Rome** (A.D. 1234) and of **S. Paolo fuori le Mura, Rome** (A.D. 1241) (p. 267 H) are of peculiar interest, as there is little other Romanesque architecture in that city, owing to the survival of the Classic tradition; besides which, the use of Roman architectural fragments still gave the churches a basilican character. The delicate twisted twin columns, inlaid with patterned glass mosaics, are the special features of these cloisters, and are a triumph of craftsmanship which has given to these coils of stone the subtlety of living forms. The coupled columns carry semicircular arches in groups of five or more openings between the recurrent piers, and form an arcade round the four sides of the cloister.

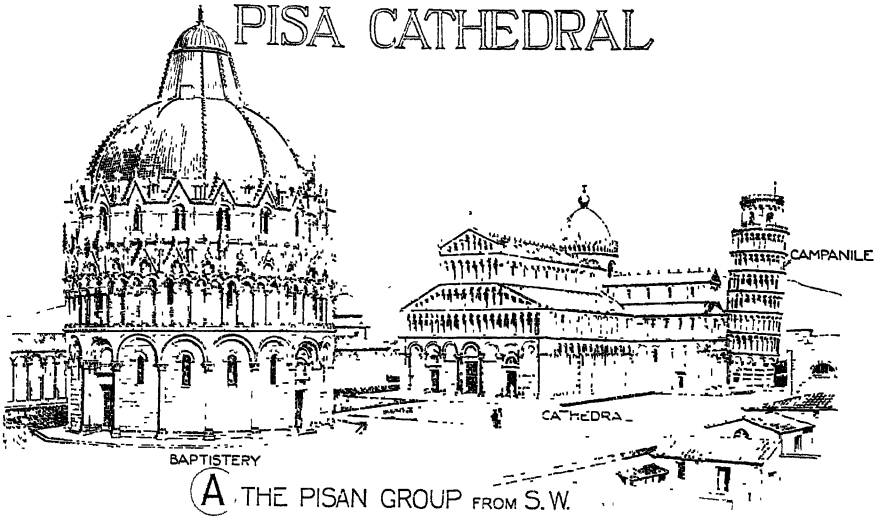
S. Miniato, Florence (A.D. 1013) (p. 259 A, B), is important as showing some innovations; for the length of the church is divided by piers into three main compartments, of which the raised eastern portion has a crypt open to the nave and containing the tomb of the saint. This division seems a prelude to the idea of vaulting in compartments, and is a departure from the basilican type of long, unbroken ranges of columns and arches. The novel panelling and banding in black and white marble, both of exterior and interior, were carried further in the Gothic period in Italy. The sanctuary has translucent marble, instead of glass, in the window openings. The open timber roof, with its bright colour decoration recently restored, gives an excellent idea of the effect produced by the use of simple colour on these basilican roofs.

NORTH ITALY

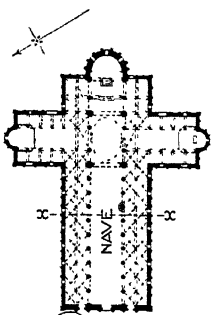
S. Antonino, Piacenza (A.D. 1104), rebuilt on the site of an earlier cathedral, is chiefly noted for its later Gothic porch, Il Paradiso (A.D. 1350).

S. Ambrogio, Milan (A.D. 1140), originally founded by the great S. Ambrose in the fourth century, raised on its present plan in the ninth century and rebuilt with vault and dome in the twelfth century, has a proud history, and set a type for early Lombard churches, as did its founder for Lombard

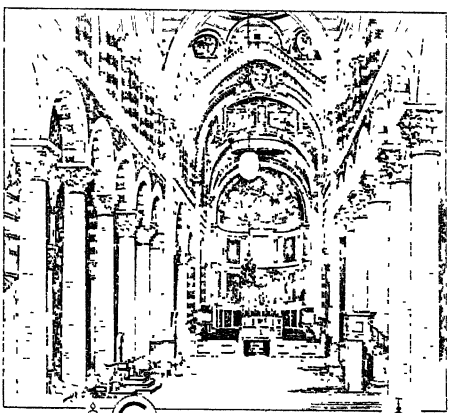
PISA CATHEDRAL



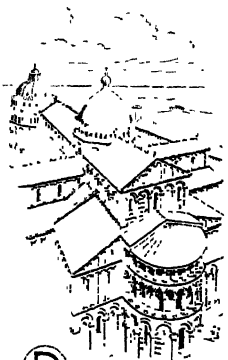
A THE PISAN GROUP FROM S.W.



B PLAN

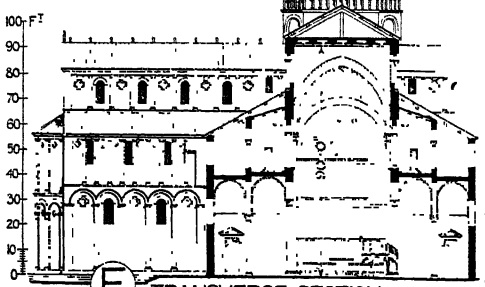


C INTERIOR LOOKING E.

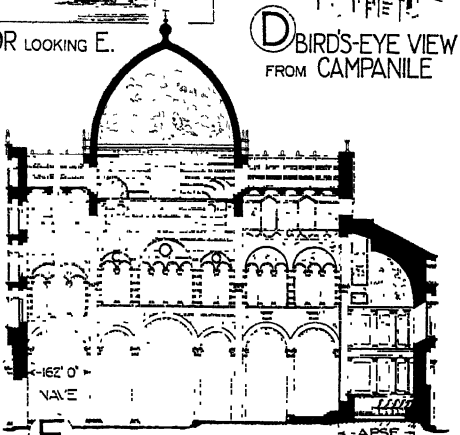


D BIRD'S-EYE VIEW FROM CAMPANILE

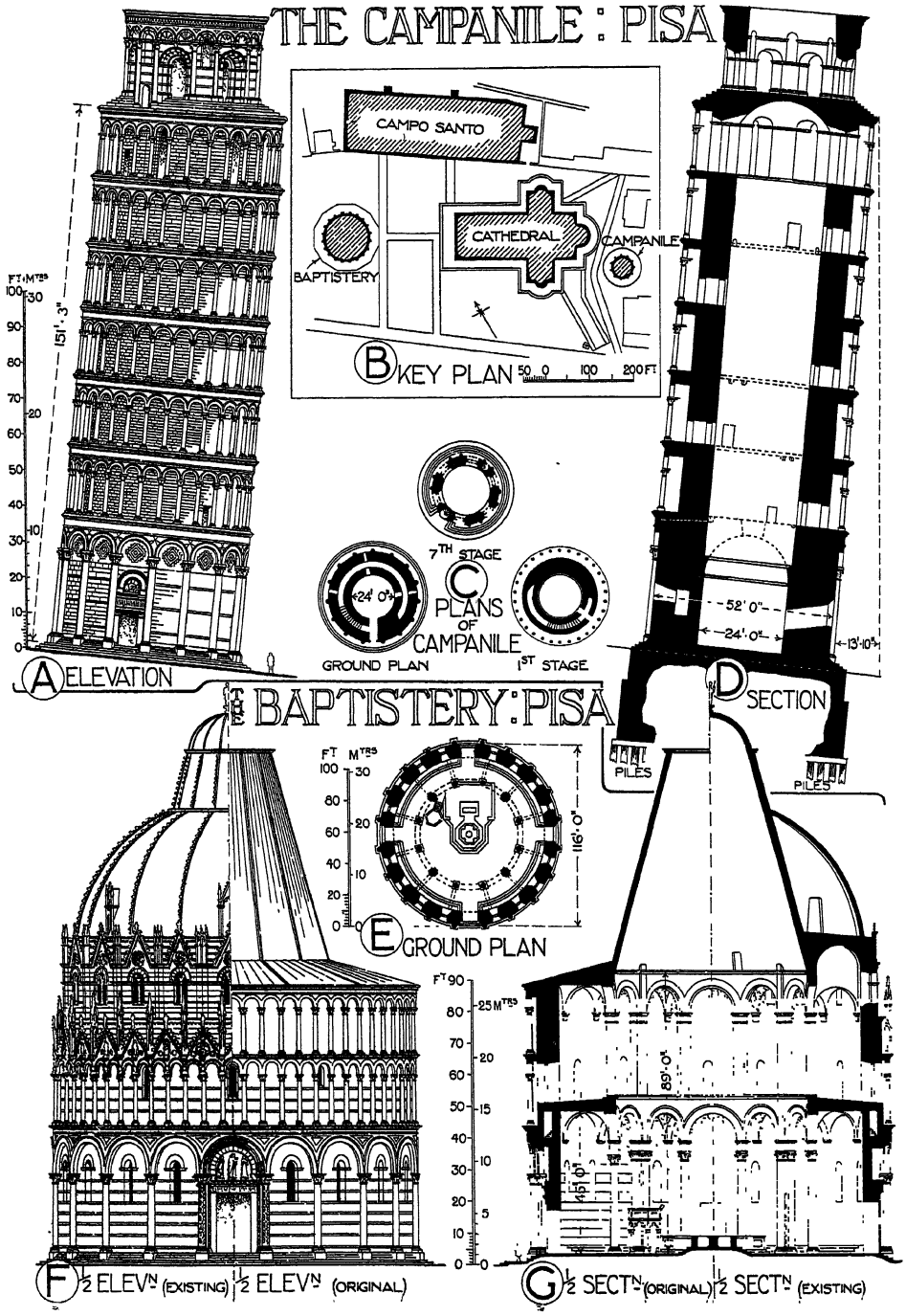
SCALE FOR PLAN
FEET 100 50 0 50 100 150
METRES 10 0 10 20 30 40



E TRANSVERSE SECTION x x



F LONGITUDINAL SECTION

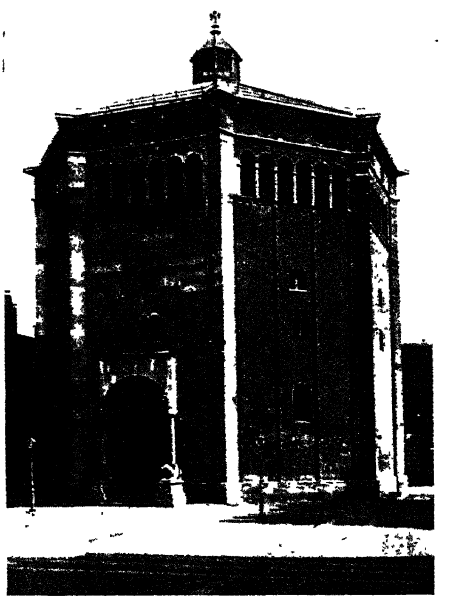

THE CAMPANILE : PISA
CAMPO SANTO
CATHEDRAL
CAMPANILE
BAPTISTERY
B KEY PLAN 50 0 100 200 FT
FT M
151'-3"
A ELEVATION
7TH STAGE
C PLANS OF CAMPANILE
24'-0"
GROUND PLAN
1ST STAGE
52'-0"
24'-0"
13'-10½"
D SECTION
PILES
PILES
THE BAPTISTERY : PISA
116'-0"
E GROUND PLAN
89'-0"
F ½ ELEVN (EXISTING) ½ ELEVN (ORIGINAL)
G ½ SECTN (ORIGINAL) ½ SECTN (EXISTING)



A. S. Miniato, Florence

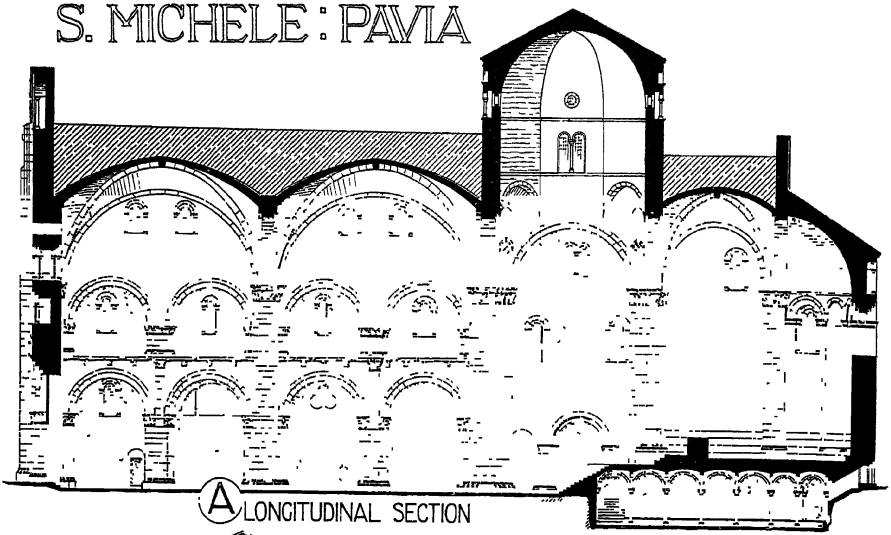


B. S. Miniato, Florence

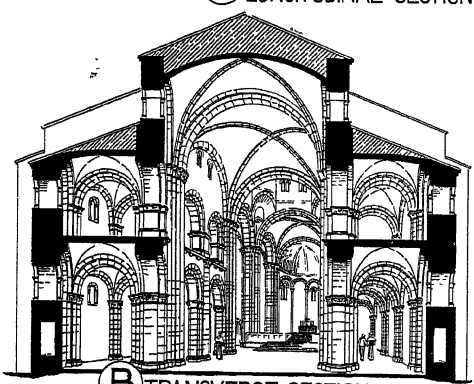


C. The Baptistery, Cremona

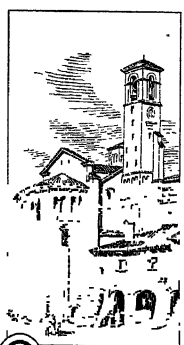
S. MICHELE : PAVIA



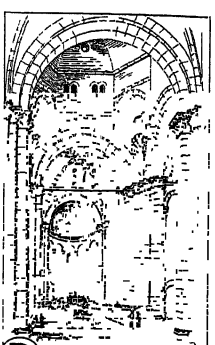
A LONGITUDINAL SECTION



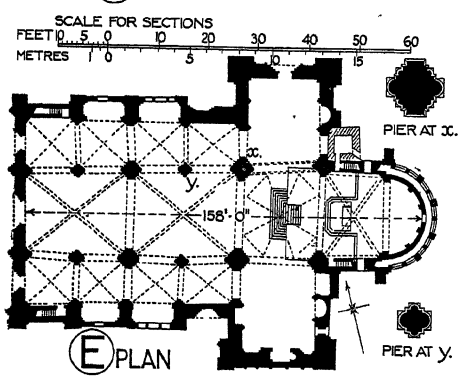
B TRANSVERSE SECTION



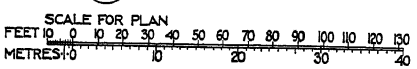
C APSIDAL END

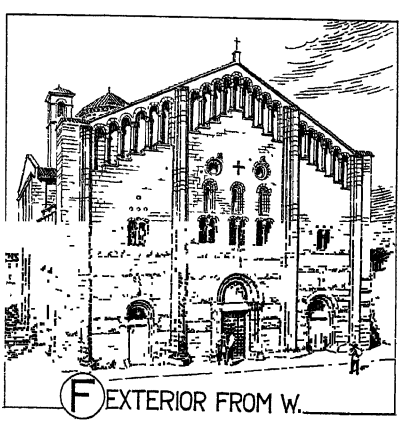


D INTERIOR LOOKING E.



E PLAN





F EXTERIOR FROM W.

ritual, which included the metrical chanting of the Mass. Here S. Augustine was baptised, the Emperor Theodosius was excommunicated, and Lombard kings and Germanic emperors were crowned. The plan includes the only existing atrium among Lombard churches, a narthex flanked by towers, vaulted nave and aisles with an octagon over the crossing, triforium gallery, raised choir over the crypt, and an apse. The pulpit (p. 268 B), supported on an arcade, has characteristic Lombard ornamentation in the projecting band and spandrels of carved birds and animals, enclosing an Early Christian sarcophagus of the sixth century.

S. Michele, Pavia (A.D. 1188) (p. 260), is a notable instance of a treatment which is an advance on the divisions, marked only by piers, in S. Miniato; for here the nave is not only divided into square bays, but these are vaulted and the dividing piers are of a clustered character, shaped to receive the vaulting ribs. This church is cruciform in plan with well-defined transepts and a raised choir, under which is a vaulted crypt. The side aisles, which are two storeys in height, are also vaulted in square compartments, two of which correspond to one vaulting bay of the nave. The flat façade shows little play of light and shade, with its three simple, recessed portals and four vertical pilaster strips from ground to gable, almost akin to buttresses. The wide-spreading gable stretches across nave and aisles and is emphasised by a raking arcade which is the only prominent feature of this simple design (p. 260 F).

S. Zeno Maggiore, Verona (A.D. 1139) (p. 265), has a façade which is stern in its simplicity. The fine projecting porch has two free-standing columns, which rest on the backs of crouching lions and support a semicircular arch, over which is a gabled roof (p. 267 J). Above is the great wheel window which lights the nave, and the whole façade is relieved by pilaster strips connected by corbel tables under the slopes of the centre gable and side roofs. The interior (p. 265 B) has a nave arcade of compound piers with uncarved capitals, and the nave shaft is carried up as if to support a vault. Intermediate columns with carved capitals support semicircular arches, surmounted by a wall banded in red brick and stone. There is no triforium, but a clear-story, and above this is a wooden ceiling of trefoil form. The choir, 7 ft. above the nave floor, has a high pointed fourteenth-century vault and an apse, and beneath is the crypt, in seven aisles, with the shrine of S. Zeno. The Campanile (p. 265 A) is detached, as usual in Italy, has no buttresses, and is of alternate courses of marble and brick, surmounted by open arcades to bell-chamber, angle pinnacles, and high-pitched roof. The sturdy tower formerly belonged to a residence of the German Emperors and is finished with Ghibelline battlements.

The **Baptistery, Cremona** (A.D. 1167) (p. 259 C), is octagonal, and has a projecting porch and the usual pilaster strips, corbel tables, and arcading.

The **Baptistery, Asti** (A.D. 1050), and the **Baptistery, Parma** (A.D. 1196–1302), are also octagonal, and modelled on that of Constantine at Rome. They represent a period of Christianity when the baptismal rite was carried out only three times a year—Easter, Pentecost, and the Epiphany—and therefore required a large and separate building.

The **Fondaco dei Turchi, Venice** (10th century), a Romanesque warehouse on the Grand Canal, is one of the few secular buildings of this period which have survived the ravages of war and fire. It is at once the outcome and symbol of the prosperous trade of Venice with the East, while the **Palazzo Farsetti** and the **Palazzo Loredan** (11th century) are in the same

style, with cubiform capitals carrying semicircular arches which are sometimes stilted.

The **Campanili** or bell-towers are a product of the period, and, unlike the church towers of England, France, and Germany, generally stand alone, though they were sometimes connected by cloisters with the church. Campanili of North Italian towns are often civic monuments rather than integral parts of churches, and, like the civic towers of Belgium (p. 473), were symbols of power or commemorative monuments, and served also as watch-towers. They are square in plan, without the projecting buttresses which are usual north of the Alps, and their design is generally simple, broken only by windows which light the internal staircase or sloping way. The window openings increase in number with the height of the tower and often form an open loggia at the top, through which may be seen the swinging of the bells, and the whole is often surmounted by a pyramidal roof, as in the recently rebuilt Campanile of S. Mark, Venice, which was originally built A.D. 888, and also in that of S. Zeno Maggiore, Verona (p. 265 A), which dates originally from A.D. 1172.

The **Torre Asinelli, Bologna** (A.D. 1109), 225 ft. high, and the **Torre Garisenda, Bologna** (A.D. 1100), 130 ft. high, are survivals of the time when the town was prominent in the struggles of the period, and are the leaning towers referred to by Dante, while **San Gimignano,** with its thirteen towers, has the appearance of a Romanesque city so often pictured by Raphael in later times.

The **House of Rienzi, Rome** (C. A.D. 1000), sometimes known as the "Casa di Crescenzio," is an instance of the degraded civic architecture of the period, and is said to be the only private house in Rome older than the fifteenth century.

SOUTH ITALY AND SICILY

Monreale Cathedral (A.D. 1174) (p. 266) stands on the heights south-west of Palermo, and is the most splendid of all the monuments erected under Norman rule in Sicily. The plan is a combination of an Early Christian basilican church in its western part and a Saracenic mosque in its eastern part, with a choir raised above the nave and with eastern apses. The nave columns have capitals of Byzantine form with "dosseret-blocks" encrusted with mosaic, to support pointed arches, which are not in recessed planes as in northern Romanesque buildings, and in the aisles there are pointed windows without tracery. The walls are covered with mosaics in gold and colour, representing scenes from Biblical history with a figure of Christ in the apse, framed in arabesques; while a high dado of white marble slabs is bordered by inlaid patterns in coloured porphyries. The open timber roofs, intricate in design, are brightly painted in the Mahometan style. The interior is solemn and grand, an effect produced by the severity of the design, enhanced by the coloured decoration. The low, oblong central lantern and the antique bronze doors add to the beauty and distinction of this famous church. The cloisters (p. 266 B), the only remaining portion of the Benedictine monastery, are the finest of the style. They consist of coupled columns, in some cases inlaid with glass mosaics, supporting pointed arches, and have beautiful Corinthianesque capitals (p. 268 E, F), one of which represents William I of Sicily offering the Church to the Virgin.

The **Capella Palatina, Palermo** (A.D. 1132) is the little chapel in the Royal Palace and served as the model for Monreale Cathedral. The gilt

and coloured mosaics of the interior, which are unrivalled, indicate Byzantine influence, while the richly carved ceiling of stalactite forms, the pulpit, candelabrum, and organ gallery show Saracenic craftsmanship.

S. Giovanni degli Eremiti, Palermo (A.D. 1132), **La Martorana, Palermo** (A.D. 1129–1143), and **S. Cataldo, Palermo** (A.D. 1161) are other churches which, in the arrangement of their domes and ornamentation, show the blending of Saracenic and Byzantine art.

S. Nicolo, Bari (A.D. 1197), like other churches of Southern Italy, is small in comparison with those of the same period in the north. The feature in the main façade of these southern churches is the projecting porch with columns standing on lions' backs, supporting a roof, and above this is the characteristic wheel window. The decorative detail is refined and graceful, largely due to the Greek descent of the craftsmen of this part of Italy. Crypts are a special feature in the south and there is a crypt at Otranto which is remarkable for the unusual number of columns which support the choir.

La Zisa, Palermo (Arabic, *El Aziza* = Palace of Delights) (A.D. 1154–66), is a rectangular, three-storeyed Norman castle with battlemented parapet, and shows the influence of Saracenic art. The vestibule is rich in marble columns and coloured tiles, while the stalactite vaults over the alcoves recall the glories of the Alhambra, Granada.

4. COMPARATIVE ANALYSIS

A. **Plans.**—In Central Italy church plans adhered substantially to those of basilicas, and naves were divided from aisles by antique columns (p. 257 B). The choir was occasionally raised above a crypt reached by steps from the nave. In the North the churches are mostly vaulted, with certain modifications due to German influence, such as transepts, as at S. Michele, Pavia (p. 260). There were many circular buildings, chiefly baptisteries, such as the one at Novara, which is connected to the Cathedral by an atrium similar to the famous atrium at S. Ambrogio, Milan. Open arcades round the apses, with the arcaded octagonal lantern at the crossing, give great charm to the buildings externally (p. 267 E, G). Projecting porches, which were preferred to recessed doorways, are bold arched structures often of two storeys, as at Verona, flanked by isolated columns on huge semi-grotesque lions, symbolic of David as the Lion of Judah (p. 267 J). Towers are straight, detached shafts, as at Piacenza and Verona, without buttresses or spires (p. 265 A). In the South the low lanterns at the crossing of nave and transepts are marked features, as at Monreale Cathedral.

B. **Walls.**—In Central Italy the Pisan school elaborated wall arcades into many storeys of galleries, which decorated alike façades, apses, and towers (p. 257 A). In North Italy many façades have less play of light and shade, as they have attached and not free-standing arcading or pilaster strips from ground to gable, as in S. Abbondio, Como (p. 267 F), often broken only by a large circular window over the entrance. The entrance front was frequently the whole width of nave and aisles and terminated in one wide-spreading gable filled in with open arcaded galleries which sprang either from horizontal or from stepped bases, as at Pavia (p. 260 F). In South Italy the lateral walls are occasionally decorated with flat pilaster strips connected horizontally by small arches springing from corbels.

C. **Openings.**—In consequence of the brilliant climate, while arcades

are universal, doors and windows, whether in Central, North, or South Italy, are small and unimportant features, with their "jambs" or sides formed in rectangular recesses or "orders" filled in with small shafts, crowned with semicircular arches (p. 267 B, C, K). Window tracery, which, however, was a later invention of the Gothic period, was at no time employed to any great extent in Italy, and even wheel windows are only rudimentary in pattern (p. 265 A); but in South Italy, as in the churches of Palermo, these windows are highly elaborated.

D. **Roofs.**—In Central Italy timber roofs over naves are of the simple, open basilican type with rafters and tie-beams often effectively decorated in colour; while aisles occasionally have groined vaults of small span, divided into compartments by transverse arches (p. 259 B). In North Italy not only aisles but also naves began to be vaulted (p. 260 B), although the nave roofs of Italian churches generally were still constructed of wood, and were not vaulted till the Gothic period in the thirteenth century. In South Italy domes rather than vaults were adopted, but timber roofs are the rule in Sicily under Mahometan influence and have stalactite ceilings, rich in design and colour (p. 266 A).

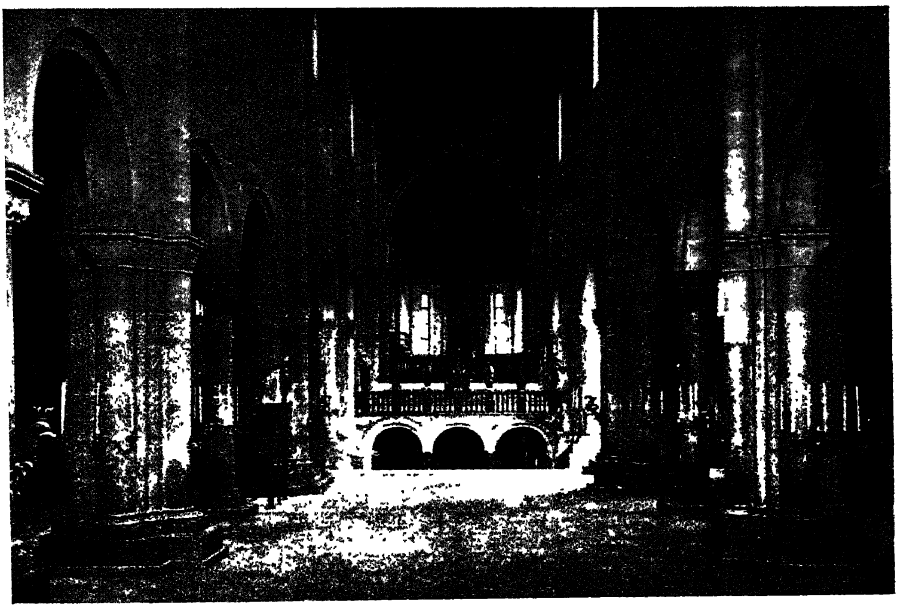
E. **Columns.**—In Central Italy during the whole of this period multitudes of columns from ancient Roman temples were utilised in the new churches, and this retarded the development of the novel types which were introduced in districts more remote from Rome (pp. 257 C, 259 B). In some places, as at Toscanella, rudely carved Corinthianesque columns carry round-arched arcades instead of entablatures. The finely carved and slender twisted columns in the cloisters of S. Giovanni in Laterano and S. Paolo fuori le Mura, Rome, are delicate variations of the Classic type (p. 267 H). In North Italy sturdy piers faced with attached half-columns took the place of the Classic column, as supports to the heavy stone vaulting (p. 260 B, D). The half-columns on the side towards the nave were carried up as vaulting shafts, and this was the beginning of a system which was destined in the Gothic period to transform the shape of piers. In South Italy and especially in Sicily greater variety in columns and capitals was brought about by changes which resulted from the successive introduction of Byzantine, Mahometan, and Norman art, of which the nave arcade columns (p. 266 A) and the coupled columns in the cloisters at Monreale (pp. 266 B, 268 E, F) are good examples.

F. **Mouldings.**—In Central Italy there are rough imitations of old Classic mouldings, but elaborate variations of a more pronounced Romanesque type in recessed planes were used in doorways and windows (p. 267 B, C, D, E, K). In North Italy flat moulded bands or strings on the exterior are varied by a series of small arches connecting the pilaster strips (pp. 267 F, G, 268 H). In South Italy mouldings are specially characterised by grace of contour and intricacy of carving (p. 268 E, F).

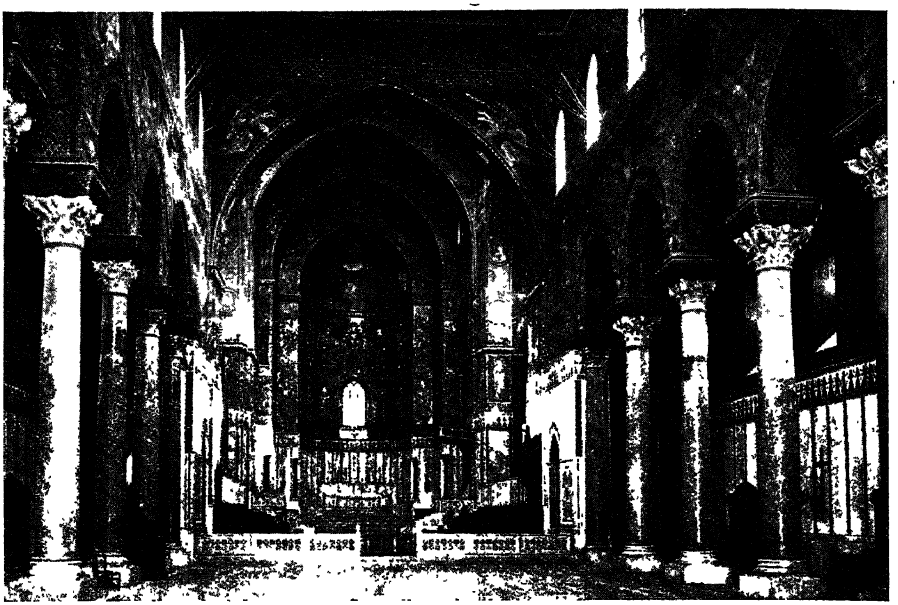
G. **Ornament** (p. 268).—In Central Italy Classic models were followed so as to suit the old fragments incorporated in the new buildings, and rough variations of the old Roman acanthus scroll are frequent (p. 268 D, J). The rows of Apostles on doorway lintels, as at Pistoia, are similar in style to Byzantine ivories. In all parts of Italy Christian symbolism now entered into decorative carving and mosaics. The monogram of Christ, the emblems of evangelists and saints, and the whole system of symbolism, represented by trees, birds, fishes, and animals, are all worked into the decorative scheme. The High Altar (p. 268 C) and the mosaic paving (p. 268 K) are



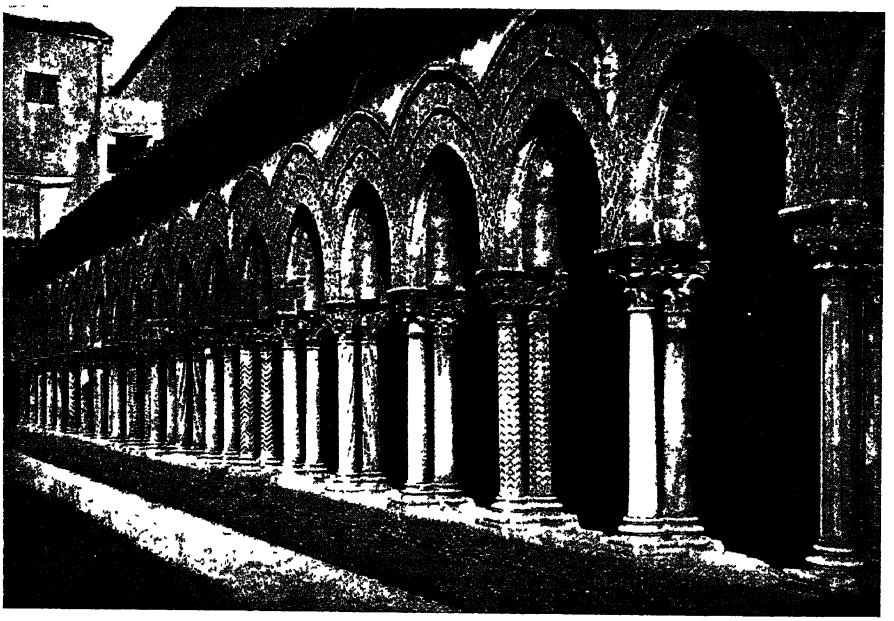
A. S. Zeno Maggiore, Verona



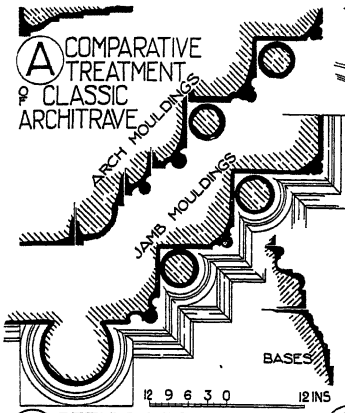
B. S. Zeno Maggiore, Verona



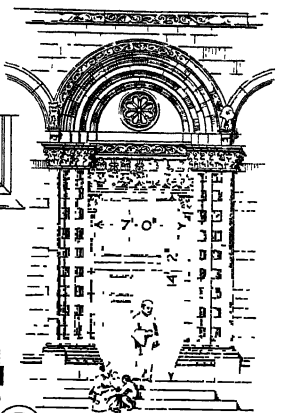
A. MONREALE CATHEDRAL



B. MONREALE CATHEDRAL: THE CLOISTERS

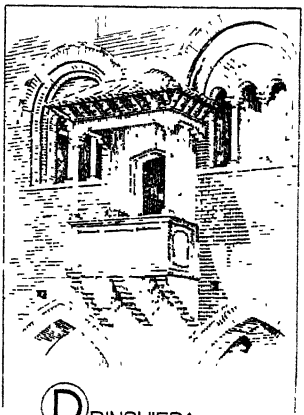


A COMPARATIVE TREATMENT OF CLASSIC ARCHITRAVE

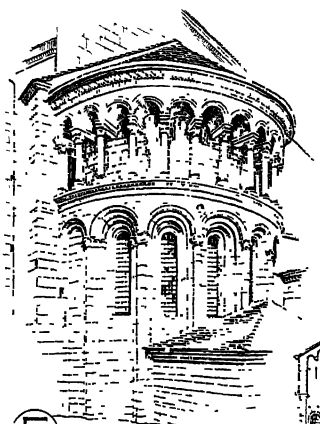


B DETAILS OF DOORWAY: S. CRISTOFORO: LUCCA

C DOORWAY: S. CRISTOFORO: LUCCA



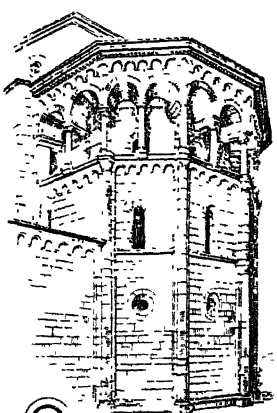
D RINGHIERA BROLETTO: MONZA



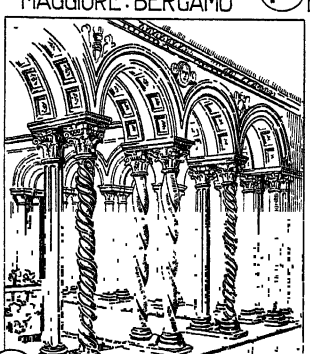
E APSE: S. MARIA MAGGIORE: BERGAMO



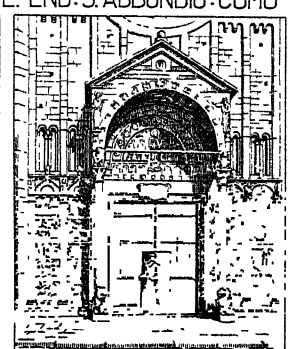
F E. END: S. ABBONDIO: COMO



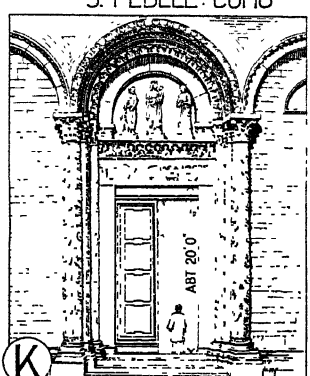
G APSE S. FEDELE: COMO



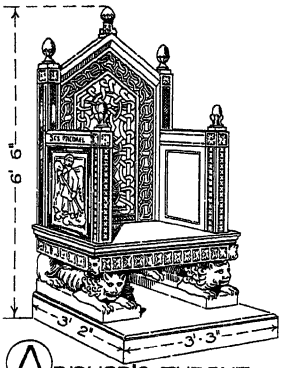
H CLOISTERS: S. PAOLO: ROME



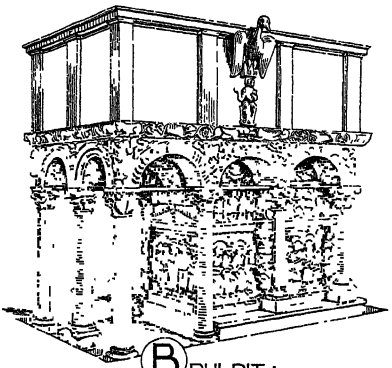
J PORCH: S. ZENO MAGGIORE: VERONA



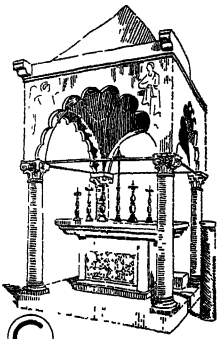
K DOORWAY: BAPTISTERY: PISA



A BISHOP'S THRONE :
S. MICHELE : MONTE S. ANGELO



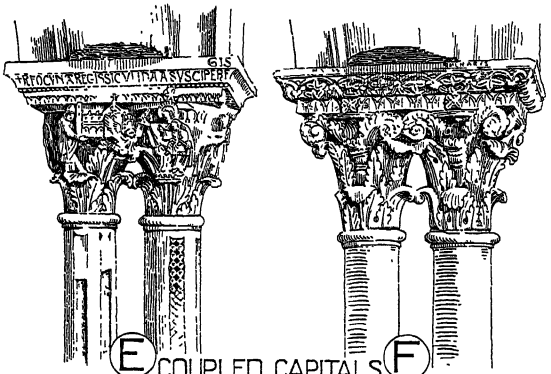
B PULPIT :
S. AMBROGIO : MILAN



C HIGH ALTAR :
S. MARIA MAGGIORE :
TOSCANELLA



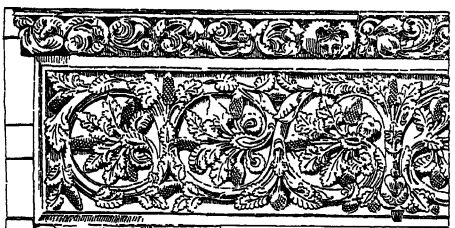
D BRONZE PILASTER
DOOR OF TRANI CATHEDRAL

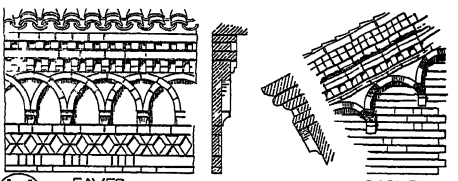


E COUPLED CAPITALS F
CLOISTERS : MONREALE

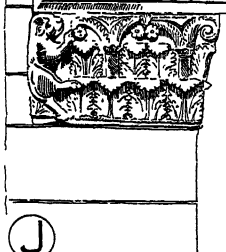


G BRONZE PILASTER
DOOR OF RAVELLO CATH.





H CORBEL TABLES : S. AMBROGIO : MILAN



J DOOR LINTEL :
S. GIUSTO : LUCCA



K MOSAIC PAVING
S. PIETRO : TOSCANELLA



L FONT :
BAPTISTERY : PARMA

characteristic examples of the period. In North Italy roughly carved grotesques of men and beasts occur, along with vigorous hunting scenes and incidents of daily life. Crouching lions support columns of projecting porches and of bishops' thrones (p. 268 A), and are symbolical of David as the Lion of Judah; while the columns represent Christ, the Pillar of the Church. The continuous scroll, known as Solomon's knot, is an emblem of Eternity, without beginning or end. The font (p. 268 L), supported on a crouching lion, and the corbel tables (p. 268 H) are typical. In South Italy elaborately modelled bronze doors are characteristic externally, while coloured mosaics add to the beauty of the interiors of Palermo churches. Colour, in spreading masses of geometric design, was the predominant note of internal decoration of South Italian and more especially of Sicilian churches, while the bronze pilasters (p. 268 D, G) clearly indicate the influence of the Classic tradition.

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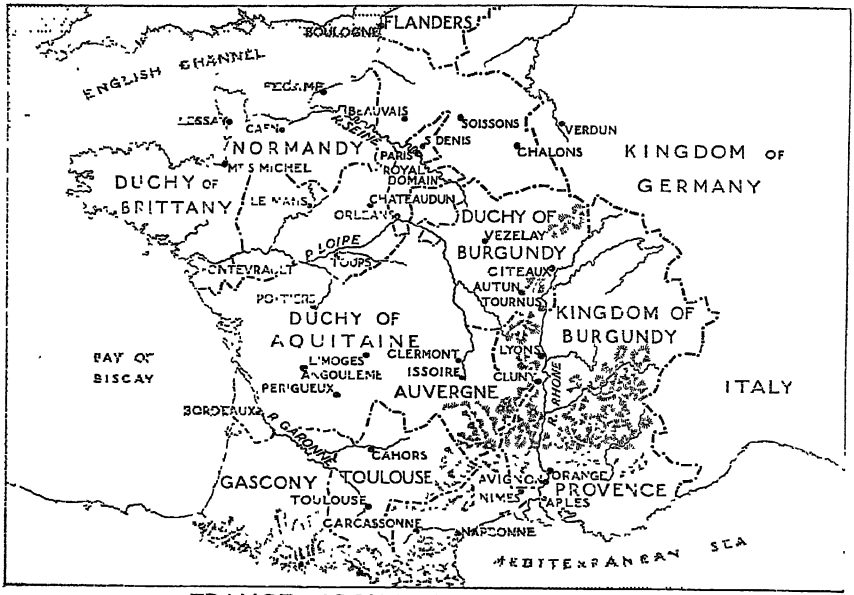
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FRANCE ABOUT THE YEAR A.D.1000.

FRENCH ROMANESQUE

I. INFLUENCES

i. Geographical.—France holds a central position between north and south on the western confines of Europe, and has great natural highways along the valleys of the Rhône, Saône, Seine, and Garonne which connect the Mediterranean with the Atlantic Ocean and the English Channel. The different provinces into which the country was divided at this period had strongly marked characteristics in architecture, as in all else, partly due to the difference in geographical position. Roman civilisation had spread through France along the historic highway of the fertile Rhône valley, where the influence of Roman architecture is everywhere evident. Somewhat later the trade route from the Mediterranean along the Garonne valley carried Venetian and Eastern influence across the south-west of France to the district around Périgueux, where we find a version in stone of Byzantine architecture. North of the River Loire is seen the influence of the Northmen who came by sea, and of the Franks who stretched across the country from the Rhine to Brittany.

ii. Geological.—France has an abundance of good stone, easily quarried and freely used for all types of buildings. In the north the fine-grained Caen stone was not only available throughout Normandy, but was so plentiful that it was shipped to England, both for ecclesiastical and secular buildings. In the volcanic district of Auvergne a special character was given to architecture by the coloured pumice and tufa, which were not only

used for walls and inlaid decoration, but were so light in weight that they were also employed in large blocks for the solid stone vaulted roofs peculiar to the district.

iii. Climatic.—The climate of the north resembles that of the south of England; in the west on the Atlantic coast it is warmer, owing to the Gulf Stream; while in the south, on the Mediterranean, it is sub-tropical. These climatic variations regulate door and window openings, which decrease in size towards the south. The climate also determines the pitch of roofs which, from being steep in the north to throw off snow, became almost flat in the south, and these features largely control the general architectural style.

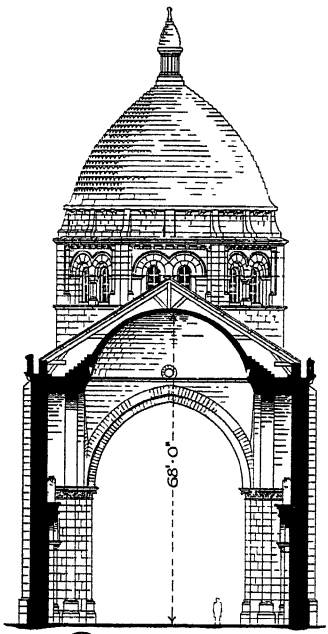
iv. Religious.—Christianity, like Roman civilisation, was carried along the natural highways of France, and was first established (A.D. 35) in the Rhône valley, while Lyons contributed martyrs to the cause. In A.D. 55 there arrived in Gaul the Apostle-Bishops who founded churches at Arles, Narbonne, Limoges, Clermont, Tours, and Toulouse, while somewhat later S. Denis became the Bishop and Martyr of Paris. In A.D. 909 the Cluniac Order was founded at Cluny, Burgundy, and was followed in A.D. 1098 by the Cistercian Order at Cîteaux, Burgundy, the severity of whose rules as to simplicity in church buildings caused a reaction from the decorative Romanesque of such buildings as S. Gilles and S. Trophîme, Arles (p. 278), and attention was then concentrated upon producing grand and severe rather than ornate buildings. The eleventh century was marked by a desire to follow the monastic life apart from the world; this resulted in the foundation of monasteries, which gave an impulse to architecture and also fostered art and learning. Religious zeal was, however, not confined within monastic walls, but was also evident in that more active spirit which found vent in the Crusades, which began in A.D. 1096 under Geoffrey de Bouillon and were continued under Louis VII (A.D. 1147). This intercourse with the East reacted in its turn on the art of the West. This crusading king, through his minister, the Abbé Suger, also extended his religious zeal to the building of churches.

v. Social.—Cæsar's conquest of Gaul was followed by the systematic Latinisation of the country, which had begun by the making of roads, with Lyons as the centre, and by the development of thriving commercial colonies which adopted the Roman social system in their independent municipalities. Then Caracalla conferred the right of Roman citizenship on the people in the third century, and the "Pax Romana" was established, and social conditions became more settled; but disturbances soon broke out on the frontier, dissatisfaction arose within and Roman administration was undermined, while landlords became all-powerful, to the detriment of industrial and commercial communities. In A.D. 496 Clovis united all the Franks under his sway, expelled the Romans from Northern Gaul, and by embracing Christianity secured the allegiance of the powerful leaders of the Church, and so established himself in the place of the Roman Emperor. After two and a half centuries of civil war and conflicts between kings and nobles, King Pepin (A.D. 752–768) united the four kingdoms of the "Ile de France." His successor, Charlemagne (A.D. 768–814), brought Western Europe under his sway, promoted education and learning, but only succeeded in establishing the unity of France and the power of the feudal system for his lifetime, so that within a century of his death France again became a series of small states. In A.D. 911, owing to the inroads of the Northmen (Normans),

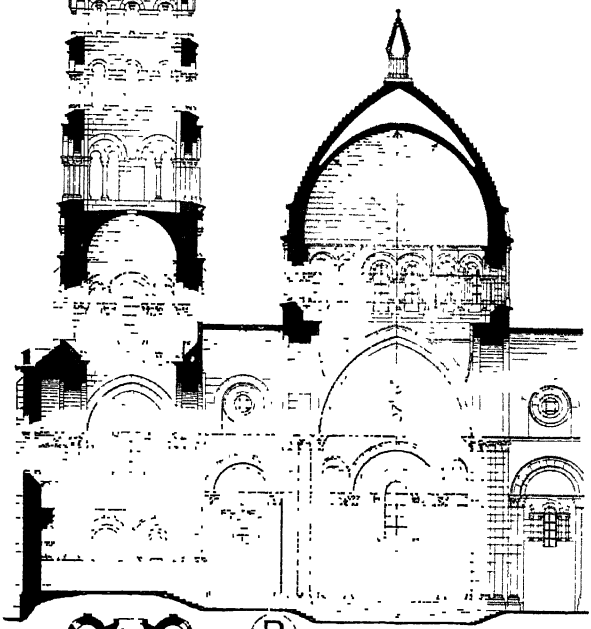
the Duchy of Normandy was established. Hugh Capet (A.D. 987–996) ascended the Frankish throne, and Paris became the capital of his kingdom, but his authority extended little beyond Paris and Orleans, as the greater part of France was held by the independent lords of Aquitaine, Auvergne, Provence, Anjou, Burgundy, Normandy, and Brittany. In A.D. 1066 Duke William conquered England, and numerous churches and castles in Normandy are a material expression of the prosperity of his duchy. Louis VI (A.D. 1108–37) encouraged the growth of communes and towns to check the power of feudal nobles, and then the social life of the people began to develop.

vi. Historical.—Gaul is introduced by Cæsar with the statement: "Gallia in tres partes divisa est," and it was occupied by different races, whose quarrels enabled Cæsar (B.C. 48) to complete the Roman conquest of Gaul, and for five centuries she remained a Roman province and absorbed Latin ideas. In A.D. 250 Frankish barbarians began their attacks, and strife continued till Goths, Franks, and Romans united to defeat Attila, King of the Huns (A.D. 451), and Theodoric, King of the Visigoths, was slain at Châlons. Then Clovis, King of the Salian Franks, defeated the Romans (A.D. 486) at Soissons, became Emperor, absorbed the Kingdom of Burgundy, drove Alaric II, King of the Visigoths, out of Aquitaine (A.D. 507), united the Frankish tribes and established the Merovingian dynasty, and this constituted the Frankish conquest of Gaul. Charles Martel, by his conquest of the Saracens at Poitiers (A.D. 732), changed the future of Western Europe. The Carlovingian dynasty followed, and Pepin was crowned as the first Carlovingian King by Pope Stephen II (A.D. 754), to whom he presented the exarchate of Ravenna. and this first established the temporal power of the papacy. The old Roman monarchical idea was now supplanted by the feudal system in France. Charlemagne, his son, King of a united France (A.D. 768–814), also arrogated to himself all Western Europe as the Holy Roman Empire, and then learning, culture, and architecture all took a step forward. On his death France was ravaged by the Northmen from overseas, and also again divided into many small states; for Louis the Pious (A.D. 814–840) left it to his three sons, and the Treaty of Verdun (A.D. 843) divided the Eastern and Western Franks into Germany and France, with Charles the Bald as King of France (A.D. 843–877). The Northmen insistently penetrated up the rivers, the monarchy grew weaker, and feudal lords grew strong enough to elect the king. Charles III put an end to the invasions of the Northmen, but ceded Normandy to Duke Rollo (A.D. 911), and this foreign influence reacted on the architecture of Northern France. Hugh Capet brought in the Capetian dynasty (A.D. 987), which, with its centre in the Ile de France, was hemmed in by powerful enemies, but under Philip I (A.D. 1060–1105) the King's power was increased, because the conquest of England by the Normans withdrew their attacks from his Kingdom. Louis VI (A.D. 1108–37) began an unsuccessful struggle against Henry I, King of England and Duke of Normandy, championed the towns and the peasantry, and kindled national sentiment. But Louis VII (A.D. 1137–80) weakened his kingdom by divorcing Eleanor of Aquitaine (A.D. 1152), who married Henry of Anjou, King of England, and so the English King now owned more than half of France. The country again rallied under Philip Augustus (A.D. 1180–1223), who was strong enough to subdue the feudal lords and attack Henry II of England. Such were the forces at this period, external and internal, sometimes social, sometimes historical, but always violent, which went to the making of the French people; while the influence of Latin

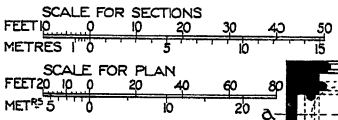
ANGOULÊME CATHEDRAL

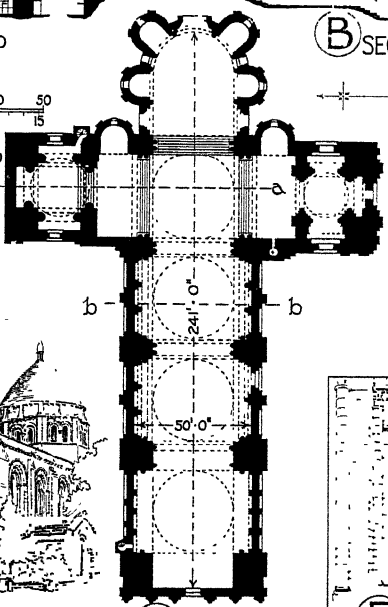


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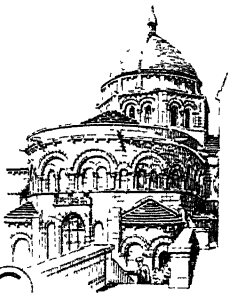


B SECTION a.a

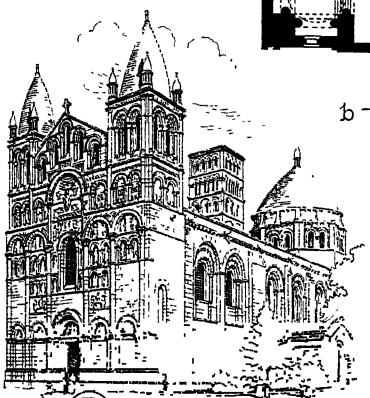




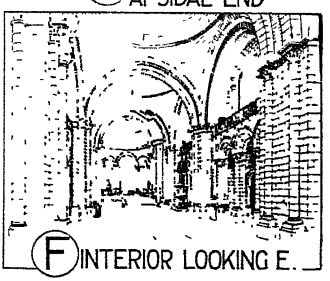
E PLAN



C APSIDAL END



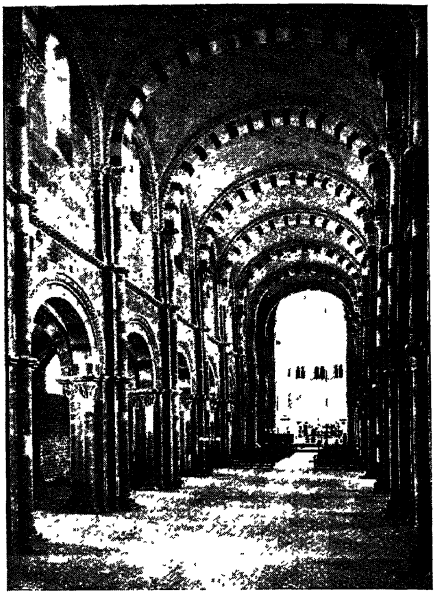
D EXTERIOR FROM S.W.



F INTERIOR LOOKING E.

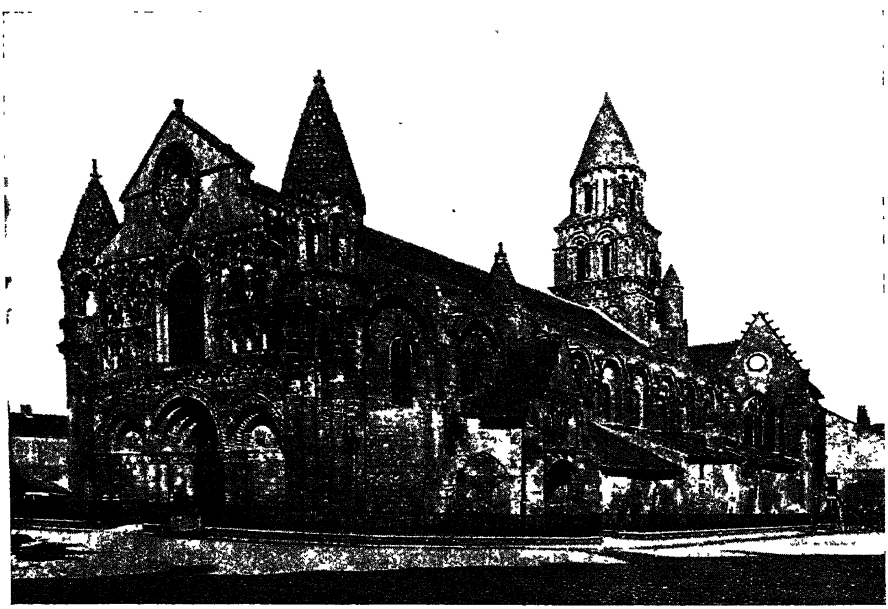


A. The Façade

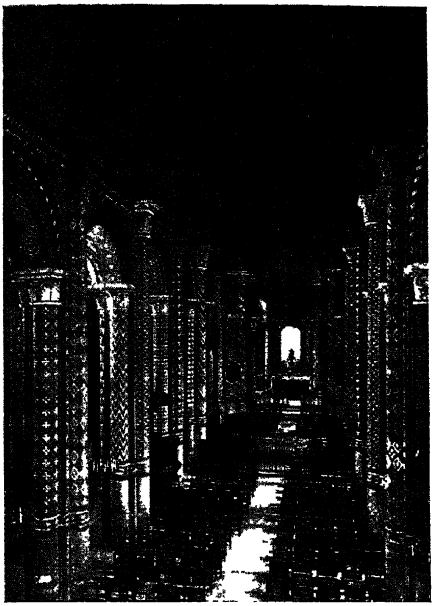


B. The Interior

S. Madeleine, Vézelay



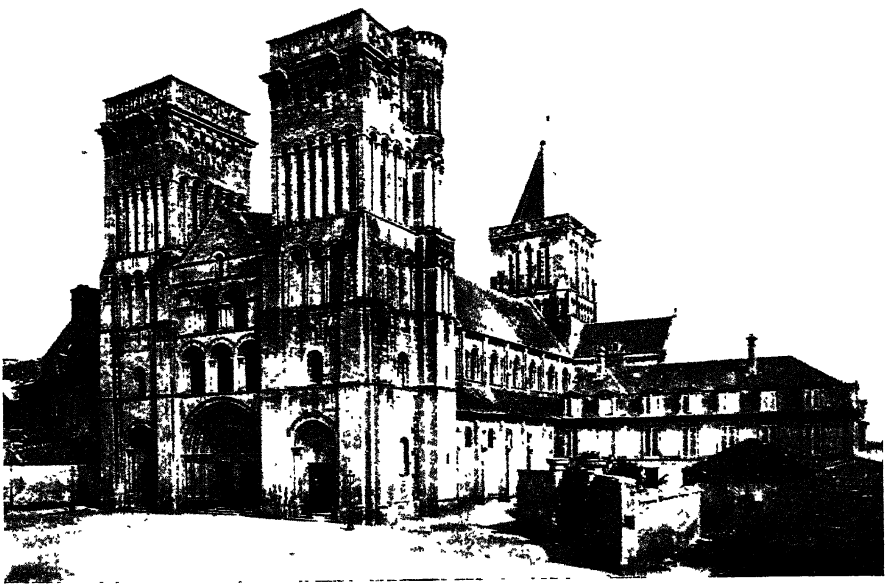
C. Notre Dame la Grande, Poitiers



A. Notre Dame la Grande, Poitiers



B. The Abbaye-aux-Dames, Caen

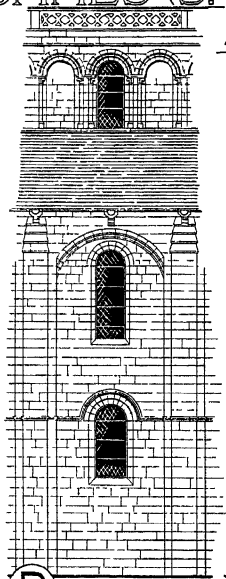


C. The Abbaye-aux-Dames, Caen

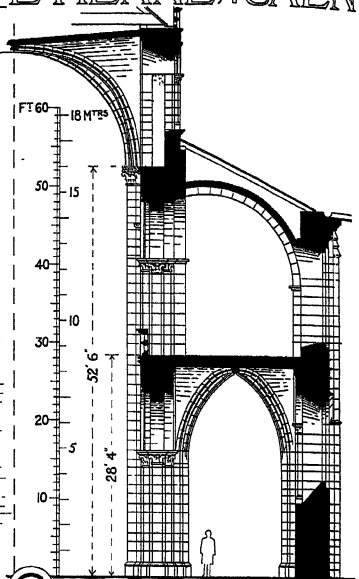
ABBAYE-AUX-HOMMES (S. ETIENNE): CAEN



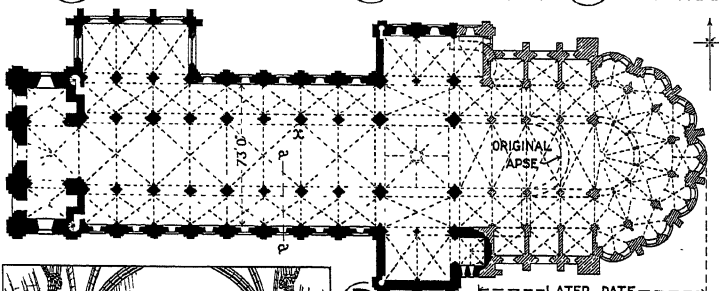
A NAVE BAYS (INT.)



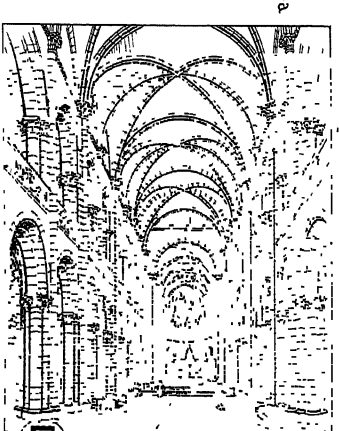
B NAVE BAY (EXT)



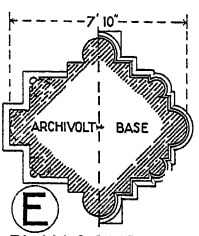
C HALF TRANSVERSE SECTION aa



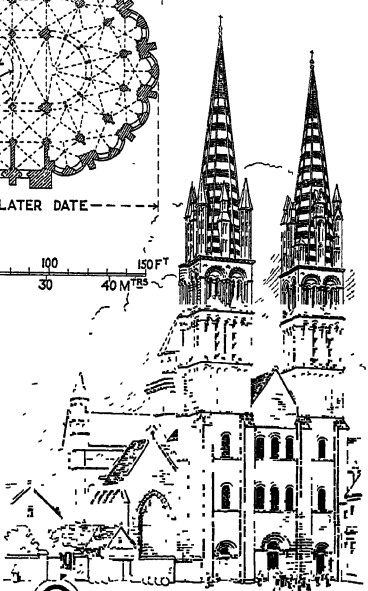
D PLAN



F INTERIOR LOOKING E.



E PLAN ♀ PIER ♀ x



G EXTERIOR FROM N.W.

civilisation is specially noticeable during the period when monasticism produced that grand series of Romanesque buildings in France.

2. ARCHITECTURAL CHARACTER

Romanesque architecture in France dates from the eighth to the twelfth century. The character differs in the North and South, which are approximately divided by the Loire valley. Certain further modifications crept in according to the various provinces into which France was divided at this period.

The South is remarkable for richly decorated church façades and graceful cloisters, and for the use of old Roman architectural features which seem to have acquired a fresh significance. Roman buildings at Arles, Nîmes, Orange, and other places in the Rhône valley naturally exerted considerable influence throughout Provence. In Aquitaine and Anjou the aisleless naves, covered with domes on pendentives (p. 273), or vaulting supported only by the massive walls of the recessed chapels, recall the great halls of Roman thermæ. The development of vaulting (p. 247) progressed, and naves were often covered with barrel vaults (p. 275 A), whose thrust was resisted by half-barrel vaults over two-storeyed aisles, thus suppressing the clear-story, as at Notre Dame du Port, Clermont-Ferrand. The pointed arch, first used in the south of France, has been held to be due to contact with the Saracens who overran this part of the country from A.D. 719 to 732.

In the North, where Roman remains were less abundant, there was greater freedom in developing a new style, and western façades of churches, especially in Normandy, are distinguished by the introduction of two flanking towers, while plain, massive side walls with flat buttresses emphasised the richness of the façades. The interiors, close set with pier and pillar and roofed with ponderous arching, form a link with the light and graceful structures of the Gothic period. Naves were covered by ribbed vaults which were often sexpartite and in square compartments or "severies," the ribs being constructed independently and supporting the panels (pp. 275 B, 276 D, F). The gradual change to the Gothic system was promoted by repeated attempts to cover oblong compartments with "rib and panel" vaults, a problem which was eventually solved by the introduction of the pointed arch, first used in the south of France, and introduced into the north in the twelfth century.

3. EXAMPLES

ECCLESIASTICAL ARCHITECTURE

Southern France was divided into the provinces of Aquitaine, Auvergne, Provence, Anjou, and Burgundy, each with its special architectural peculiarities, the extent of which can be traced in the examples which follow.

S. Sernin, Toulouse (A.D. 1080–96), in Aquitaine, has a cruciform plan with nave, double aisles, and transepts. The nave is crowned by a round-arched barrel vault, with plain square ribs, supporting the roofing slabs direct, and the high triforium chamber has external windows which light the nave, for there is no clear-story. The central octagonal tower belongs to the Gothic period (p. 453).

S. Front, Périgueux (A.D. 1120) (p. 233), in Aquitaine, is a Greek cross on plan, and, as already mentioned (p. 237), closely resembles S. Mark, Venice. The church is covered with five spheroidal domes, elongated towards the top, indicating an Eastern influence, due to the trade with Byzantium. The internal arches have recently been changed from pointed (p. 233 F) to semi-circular. Attached to the church is a magnificent campanile, 200 ft. high, consisting of a square shaft, surmounted by a circular ring of columns carrying a conical dome. S. Front was a prototype of other churches with cupolas in France.

Angoulême Cathedral (A.D. 1105–28) (p. 273), in Aquitaine, has a long aisleless nave, 50 ft. wide, transepts with lateral chapels, and an apsidal choir with four chapels, forming a Latin cross on plan. The nave is covered with three stone domes on pendentives and a double dome over the crossing raised on a drum with sixteen windows and crowned by a finial. Both transepts originally had towers, but the southern one was destroyed in A.D. 1568. The west façade (p. 273 D) is exceptionally rich with tiers of arcades divided into five bays by lofty shafts. Over the entrance is a high window framed in sculpture, and there are two flanking western towers.

Cahors Cathedral (A.D. 1119), also in Aquitaine, is an aisleless church crowned by two domes on pendentives, and somewhat resembles S. Irene, Constantinople (p. 230).

Notre Dame du Port, Clermont-Ferrand, and **S. Austremoine, Issoire,** both in Auvergne, have a local character imparted to them by the light stone vaults, and by the inlaid decoration formed of different-coloured lavas of the Puy de Dome.

Notre Dame, Avignon, in Provence, is one of the numerous churches of the eleventh and twelfth centuries, in which pointed barrel vaults were used, and which show Classical influence.

S. Trophîme, Arles (A.D. 1150), has beautiful cloisters with coupled carved capitals (p. 285 F) and a fine porch (p. 285 K), based on a Roman triumphal arch, but with modifications, such as deeply recessed jambs and columns resting on lions behind which are sculptured saints ; the entablature carries a row of figures and the sculptured tympanum represents Christ as Judge of the World.

The **Church at S. Gilles** (C. A.D. 1150), near Arles, has probably the most elaborate sculptured façade in Provence (pp. 282 A, 286 L), with three porches connected by colonnades which may have suggested the façade of S. Mark, Venice (p. 235).

Notre Dame la Grande, Poitiers (A.D. 11th century) (pp. 274 C, 275 A), in Anjou, has a fine sculptured west front and imposing conical dome over the crossing, while the interior (p. 275 A) has neither triforium nor clear-story, but is covered with a barrel vault having highly pronounced transverse ribs.

Fontevrault Abbey (A.D. 1101–19), also in Anjou, resembles Angoulême Cathedral in its aisleless nave and general arrangement, and is interesting to Englishmen as the burial-place of the English Kings, Henry II and Richard I.

The **Abbey Church, Cluny** (A.D. 1089–1131), the most famous in Burgundy, formed part of one of the many monastic establishments in that province, which influenced the architecture of the churches, many of which have been destroyed. It was the longest in France, with double side aisles to the main body of the church, and a chevet of five apsidal chapels. The pointed arch was employed in the nave arcades, the nave was covered with

a great barrel vault and the aisles probably had groined vaulting, but little now remains.

Autun Cathedral (A.D. 1090–1132) (p. 287), another Burgundian church, has a nave covered with a pointed barrel vault on transverse arches which spring so low down as almost to squeeze out the clear-story windows. At the east end there are three apses, and the portals of the west front are rich in the Burgundian style of sculpture.

S. Madeleine, Vézelay (A.D. 1100) (pp. 274, 282), in Burgundy, is interesting for its remarkable narthex (A.D. 1130) with nave and aisles crowned, it is believed, by the earliest pointed cross-vault in France; this leads into the church, which also has nave and aisles, while transepts, choir, and chevet were completed in A.D. 1220. The nave has no triforium, but a clear-story with small windows between the immense transverse arches of the highly domical, groined intersecting vault (p. 274 B). The central portal (p. 274 A), with two square-headed doorways, separated by a Corinthianesque column, is spanned by a large semicircular arch containing a relief of the Last Judgment, while left and right are side portals, and in the upper part of the façade is a large five-light window richly sculptured and flanked by towers, that on the left rising only to the height of the nave.

S. Philibert, Tournus, in Burgundy, once the Abbey Church of the Benedictine monastery, has arches which span the nave from pier to pier, and support a barrel vault under which windows were formed in the nave walls.

Northern France comprised the provinces of Normandy, the Ile de France and Brittany.

The **Abbaye-aux-Hommes, Caen** (A.D. 1066–77) (pp. 276, 281), known as S. Etienne, is one of the many fine churches in Normandy of this period, which were the product of the prosperity and power of the Norman Dukes. It was commenced by William the Conqueror, and is of the vaulted, basilican type which was developed into the complete Gothic in the thirteenth century, and may have been founded on the Romanesque church of Spires (p. 293). Its original eastern apse was superseded in A.D. 1166 by the characteristic chevet (pp. 276 D, 281). The west façade, flanked by two square towers, crowned by octagonal spires which with angle pinnacles were added in the thirteenth century, was the prototype of later Gothic façades. The nave vaulting illustrates the difficulties of spanning oblong compartments without the aid of the pointed arch, where two bays are comprised under one vaulting compartment, which is approximately square, and so the height of the transverse, diagonal, and wall ribs is nearly equal, resulting in a system known as "sexpartite" vaulting (pp. 248, 276 F). This method was superseded on the introduction of the pointed arch, when each compartment, whatever its shape, could be vaulted without reference to the neighbouring one, because the difference between the width of the nave and the distance longitudinally between the piers could easily be surmounted by pointed arches of different radii manipulated so as to equalise the height of the ribs. The thrust of this nave vault, one of the earliest, was counteracted by a semi-barrel vault over the triforium gallery, protected externally by a timber roof, and forming, as it were, a concealed flying buttress, which later in the thirteenth century was emphasised externally as a feature of the design. The Abbaye-aux-Hommes is a remarkable instance of the use of spires as architectural features; for there are no less than nine spires, giving the vertical expression which became characteristic of Gothic architecture (p. 305).

The **Abbaye-aux-Dames** ("**La Trinité**"), **Caen** (A.D. 1062–66) (p. 275 B, C),

founded by Matilda, wife of William the Conqueror, has a fine western façade with two square towers in arcaded stages, strengthened at the angles by flat buttresses and formerly crowned by spires. The massive walls of nave and aisles with slightly projecting buttresses and the square tower over the crossing complete this homogeneous design. The interior (p. 275 B) has a remarkable intersecting sexpartite ribbed vault, as in the Abbaye-aux-Hommes, in which two bays are included in each vaulting compartment, with semicircular diagonal and transverse ribs and intermediate ribs which support a vertical piece of walling.

S. Nicholas, Caen (A.D. 1084), and the **Abbey Church of Mont S. Michel** (p. 453), are other churches which illustrate the difficulties of vaulting before the pointed arch provided the solution.

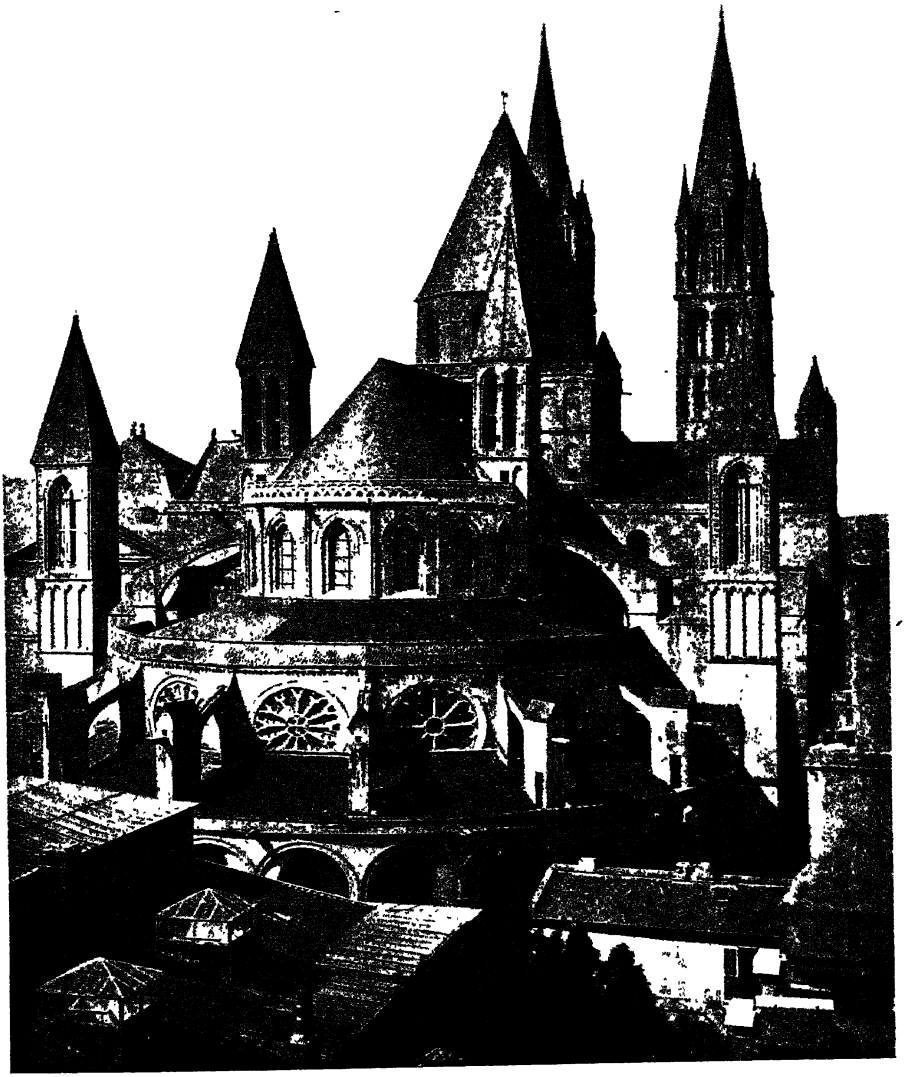
The **Abbey of S. Denis** (A.D. 1132) (p. 440), near Paris, erected by the great builder Abbé Suger, is one of the few buildings in this style in the royal domain of the Ile de France, which during this period comprised only a small territory, and it was not until the Gothic period that the great outburst of building activity occurred in this district. The Abbey church is of great interest as the burial-place of the French kings. The original choir and west front with two interior bays still remain, and a thirteenth-century nave has been wedged between them. This west front, with its mingling of round and pointed arches, is an early instance of the use of the pointed arch in design.

SECULAR ARCHITECTURE

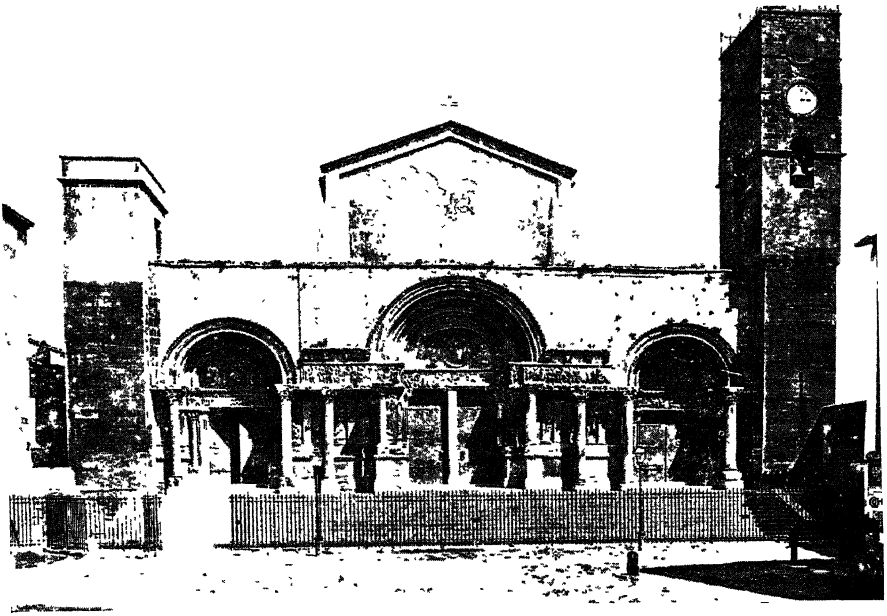
Buildings other than ecclesiastical have not been well preserved, because they were not sacred against attack, also because they were generally actually built for military purposes and so were specially liable to destruction, besides the risk of injury by fire and their adaptation to changed requirements. **Fortified towns,** like Carcassonne, which dates from Roman times; **bridges,** like the Pont d'Avignon (A.D. 1177), built by the *frères-pontifes* or sacred guild of bridge builders; **castles,** such as the Châteaux de Chateaudun and the picturesque fortified Abbey of Mont S. Michel (p. 453), and the stone **houses** of the twelfth century still found at Cluny and elsewhere, are types of buildings which started in the Romanesque style, but were much altered or extended in the Gothic period. The Monastic Kitchen, Fontevrault (A.D. 1115) (p. 285 D), with its fine roof, and the fireplace and chimney from S. Gilles (p. 285 B), are remnants which show the character of the secular work of this period.

4. COMPARATIVE ANALYSIS

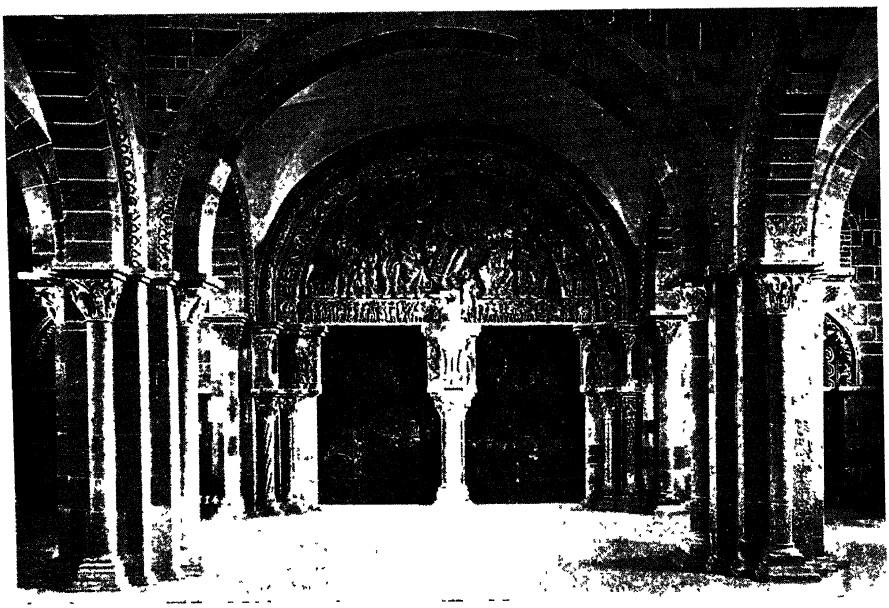
A. **Plans.**—In the south, churches were cruciform in plan and frequently had aisleless naves covered with domes on pendentives, due to Byzantine influence, or had naves covered with barrel vaults whose thrust was taken by half-barrel vaults over aisles in two storeys (pp. 273 E, 276 D). Buttresses are internal and form the divisions between the chapels which flank the nave, as at Vienne Cathedral. Towers are sometimes detached, like Italian campanili. Cloisters are treated with the utmost elaboration, as at S. Trophîme, Arles (p. 285 F), and form a special feature in the plan of many churches of the period. Circular churches are rarely found. In the north, plans were of the basilican type with nave and aisles. The use of high nave vaults changed the setting-out of the bays, which were brought to a square



THE ABBAYE-AUX-HOMMES, CAEN, FROM E.



A. S. GILLES: WEST FAÇADE



B. S. MADELEINE, VÉZELAY: THE NARTHEX

by making one nave vaulting compartment equal to the length of two bays of the aisles (p. 276 D), until the introduction of the pointed arch overcame the difficulty of vaulting oblong compartments with ribbed vaults.

B. **Walls.**—The massive walls characteristic of this period were, in both south and north, of rubble faced with squared stone. Sculptured and moulded ornament was concentrated on wall arcades especially on western façades, which thus stand out in contrast to the general simplicity of the external wall treatment (p. 274 C). Façades are often divided by string courses or horizontal mouldings into storeys relieved by single, coupled, or grouped windows, and frequently have arcading as at Échillais (p. 285 C). Buttresses are wide strips of slight projection (p. 275 C) or half-round shafts (p. 285 G) ; while flying buttresses, admitting of high clear-story windows to light the nave, were introduced in the latter half of the twelfth century (p. 281). Towers are generally square with pyramidal or conical roofs (p. 285 A), and by their grouping and number give a vertical character to the style, as at the Abbaye-aux-Hommes, Caen (p. 281).

C. **Openings.**—In the south, nave wall arcades of aisleless churches are semicircular, with mouldings in recesses or " orders " (p. 274 B), while arcades of cloisters are elaborated with coupled columns in the depth of the walls, and with carved capitals which support the semicircular arches of the narrow bays, which were left unglazed as in Italy (p. 285 F). The western portals of such churches as S. Trophîme, Arles (p. 285 K), and S. Gilles (p. 282 A) recall the columns and horizontal entablatures of the Romans, but in other cases doorways have recessed jambs as usual in this period (p. 285 J, L). Narrow windows with semicircular heads and wide splays inwards sufficed to admit light, especially in the south (p. 285 G). In the north, nave arcades are spanned by semicircular arches which are repeated in the deep triforiums, as at the Abbaye-aux-Hommes. Imposing western doorways (pp. 274 A, C, 275 C) with sculptured tympana were the forerunners of the magnificent sculptured entrances of the Gothic period. Windows with semicircular heads are sometimes grouped together and enclosed in a larger arch, as in the nave wall or clear-story immediately beneath the vault (p. 275).

D. **Roofs.**—In the south, naves were first covered by barrel vaults (p. 275 A) buttressed by half-barrel vaults over aisles, which were sometimes two storeys high and thus left no space for a clear-story. The vault was sometimes pointed (p. 287), and this had the advantage of lessening the superincumbent thrust of the stone roofing slabs which, especially in Auvergne, were frequently laid direct upon the vaults and were given the low pitch suitable to the south. The narthex or ante-chapel of S. Madeleine, Vézelay (A.D. 1130), is generally believed to have the earliest pointed cross-vaults in France. As to the external treatment of roofs in southern France, while climatic conditions decided that they need only be low in pitch, other factors entered into the nature of their construction ; for in the volcanic district of Auvergne the light nature of the stone resulted in stone-covered vaults ; while in Aquitaine, the trade route from the east caused the reproduction there, as in Périgueux, of the domes of Venice and Byzantium. In the north, the height of clear-stories was increased by means of intersecting ribbed vaults whose thrust was taken by buttress arches under the aisle roofs (p. 276 C)—a step towards the later external flying buttresses. The stone vaults over naves were covered by wooden framed roofs to support the slates or other protective covering and were steep in pitch, as the need

to throw off snow and water was a determining factor in their construction (p. 281).

E. **Columns.**—In the south, the piers were derived from the Roman square pier, with attached columns to which were added nook shafts, and on the nave side the half-round shafts were carried up as vaulting shafts (p. 274). These piers, as at Lessay (p. 285 H), were the prototypes of the richly clustered Gothic piers. Capitals, as at Aix, clearly show the influence of Classic buildings (p. 286 K). In the north, similar piers were in use, while cylindrical piers, as at Notre Dame, Paris (p. 438 B), were also frequent, surmounted with carved capitals of Corinthianesque type and square moulded abacus, from which the vaulting shafts start awkwardly (p. 285 M, N, P, Q, R).

F. **Mouldings.**—In the south, Classic tradition is reflected in the graceful moulding contours. Capitals and bases are either rough imitations of the old Roman Corinthian type (p. 286 C, H) or have considerable variations, due to the introduction of animal figures. In the north, the jambs are formed in receding planes, with recesses filled with nook shafts fluted or carved with zigzag ornament. Capitals are frequently cubiform blocks, sometimes carved with animal subjects (p. 286). Corbel tables of great richness, supported by grotesquely carved heads, often form the wall cornices (p. 286 E).

G. **Ornament.**—In the south, painted glass was not favoured, and small clear-glazed openings were employed to set off the opaque colour decoration of the walls. Figure sculpture is at its best in Provence, as in the portals of Arles (p. 285 K) and S. Gilles (p. 286 L), where we can see the early promise of the remarkable sculpture of the French Gothic period ; while in Aquitaine sculpture is confined to the capitals, which are sometimes carved with figures, animals, and Bible subjects, and are frequently derived from Roman Corinthian prototypes (p. 286 A, C, D, G). Façades of churches of the Charente district in Aquitaine have this elaborate carved ornament representing foliage, or figures of men and animals (p. 286 J), and capitals of columns on the ground storey were often continued as a rich, broad frieze across the building (p. 286 L). In the north, stained glass, which was more suitable to large openings, was only gradually developed. The diaper work in the spandrels of arches is supposed to be an imitation in carving of the colour-pattern work or stuff draperies that originally occupied the same position, while the period is rich in carving of zigzags, rosettes, and billets (p. 286 F, M). The carved tympana, dealing with Biblical subjects, are frequently of great interest (pp. 282 B, 286). Owing, however, to the comparative absence of antique Roman models in the north, figure sculpture is rare in this period and never approached the beauty of the sculpture at Arles in the south.

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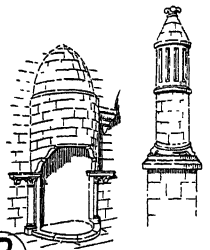
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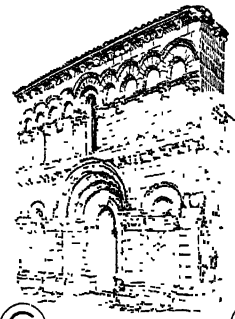
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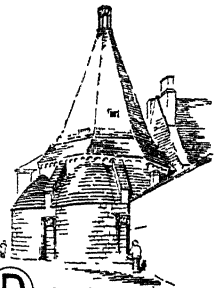
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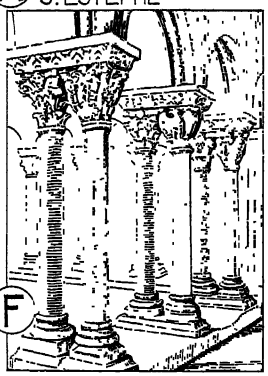
B FIREPLACE & CHIMNEY ABBEY OF SENANQUE: S. GILLES



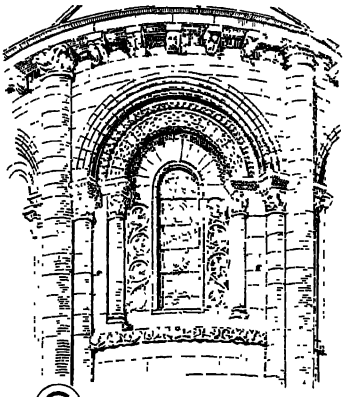
C WEST FAÇADE ECHILLAIS



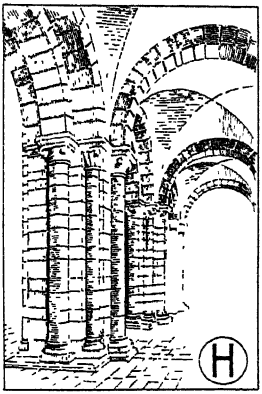
D MONASTIC KITCHEN FONTEVRAULT



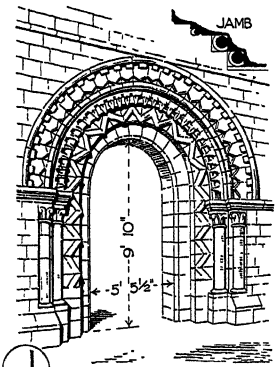
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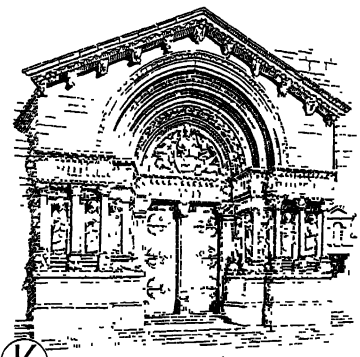
G APSE: S-PIERRE: AULNAY



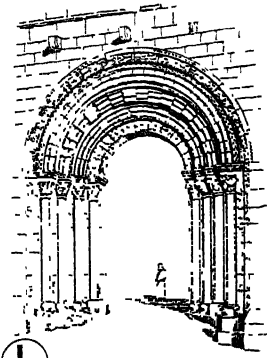
H NAVE PIERS: LESSAY



J DOORWAY: SERQUIGNY



K PORCH: S-TROPHÎME: ARLES



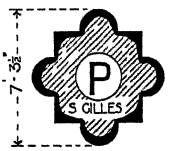
L DOORWAY FONTGOMBAULT



M EARLY NAVE PIER



N CERISY-LA-FORET



P

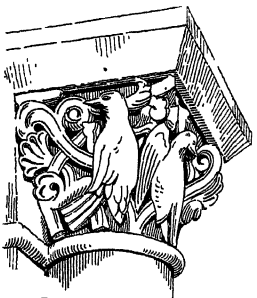


Q ABBAYE AUX DAMES CAEN



R BERNIERES-SUR-MER

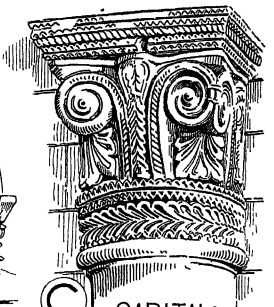
NAVE PIERS



A CAPITAL: FLEAC



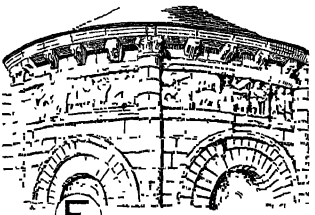
B TYMPANUM: LA CHARITÉ-Sr-LOIRE



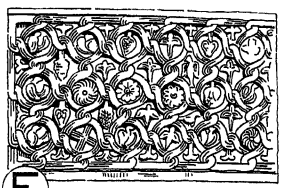
C CAPITAL: S. AIGNAN-Sr-CHER



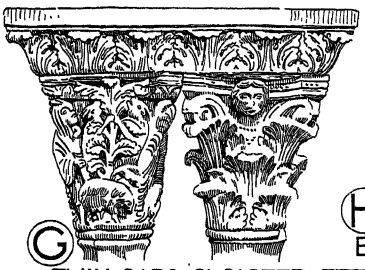
D TWIN CAPITALS: S. SERNIN: TOULOUSE



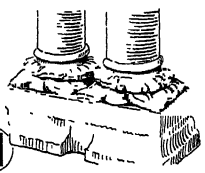
E APSIDAL END. SELLES-SUR-CHER



F CARVING: VENCE



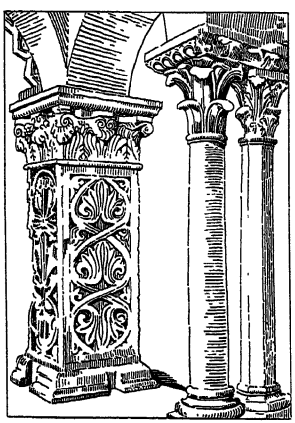
G TWIN CAPs CLOISTER S. TROPHÎME: ARLES



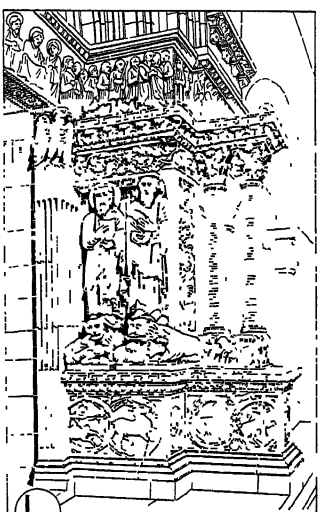
H BASES: AIX CATHL



J SCULPD FRIEZE: ANGOULÊME CATHL



K PIER AND COLUMNS: CLOISTER: AIX CATHL



L DOORWAY: S. GILLES

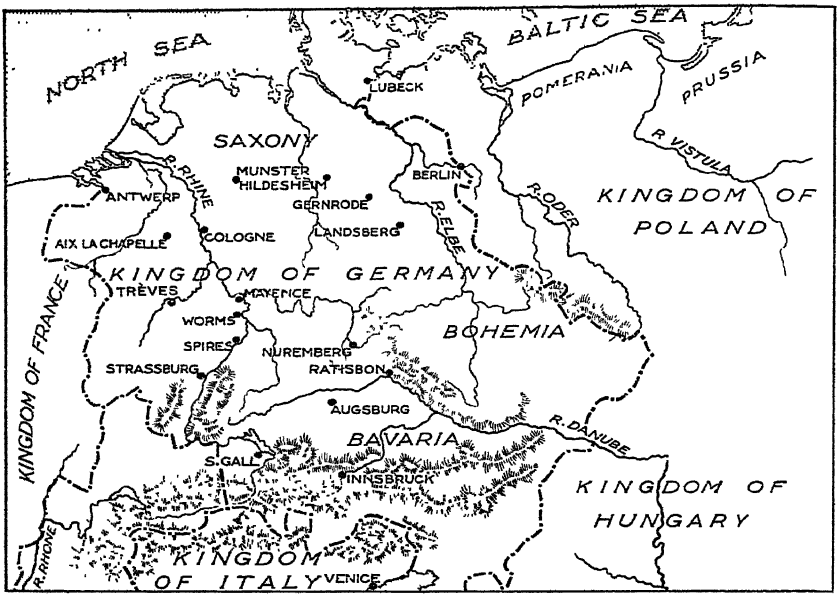


M SCULPD SPANDREL: BAYEUX CATHEDRAL

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AUTUN CATHEDRAL



GERMANY IN THE 12TH CENTURY

GERMAN ROMANESQUE

1. INFLUENCES

i. Geographical.—Germany was through many centuries a conglomeration, first of various tribes fighting amongst themselves, and then of various independent states, principalities, and powers occupying the great central district of Europe. This country north of the Alps was not geographically so generally accessible to Roman influence as was Gaul, with her sea-ports and great trade routes, but here the Rhine played the same part in civilisation as the Rhône did in Gaul, and Roman civilisation spread north-west along the fertile Rhineland and into Saxony, and here Roman cities had been founded, while the region to the north and east was untouched by Roman civilisation. The " Peutinger Tabula," a Mediæval copy of a Roman map, now at Vienna, shows the principal Roman towns on the Rhine, with their thermæ and other public buildings.

ii. Geological.—Stone from the mountains along the Rhine Valley was the material used for buildings in this district, and the churches were rendered more permanent and fireproof by the early introduction of vaulting. Along the Baltic shores and in central and southern Germany there was an ample supply of timber. As there was no stone or timber in the plains of the north-west, brick was there employed, and the style consequently differs from that of other districts.

iii. Climatic.—The average temperature of central Germany is much the same as in southern England, but the heat in summer is ten degrees higher

and in winter correspondingly lower, a variation which is still indicated in Berlin by the conversion of carriages into sledges for winter use. Roman influence on architecture of this period was so insistent that even the northern climate did not exert its full influence in building, nevertheless there was a distinct tendency to large windows, suitable for the north, and to steep roofs to throw off snow.

iv. Religious.—Christianity naturally followed along much the same lines as Roman civilisation, and under the influence of Rome it took root in southern Germany and in the Rhineland, while the rest of the country remained pagan. As early as the sixth century the bishops of Trèves and Cologne were conspicuous in promoting church building, of which evidences can still be traced. Charlemagne, in furtherance of his desire to extend the Christian religion, forced the people of Saxony to embrace Christianity, and this resulted in the erection of a number of circular baptisteries, as the conversion of the tribes made a great demand for the baptismal rite.

v. Social.—The social development of these central districts was much the same as in Europe generally: a few strong kings emerged from among weak ones, while feudal lords were constantly intolerant of kingly authority and oppressive towards the people, who became freemen or fell back as serfs, according as kings and cities prevailed against feudal tyranny, and at this period churches were only churches of monks and not of the common people. Germany, united under Charlemagne, afterwards split up into small principalities, and these conditions naturally fostered differences in architectural style. The feudal system made great strides, as it appealed to the desire of the feudal lords to become dukes of independent states, who could defy the authority of the king and tyrannise over freemen. Cities, which first grew strong in the Rhineland, found more consideration from kings than from feudal lords, so that the country was distracted by constant strife, till in A.D. 919 Henry the Fowler made himself king of a united Germany and there was peace in his time, during which many towns sprang up and freemen found it possible to carry on their industries.

vi. Historical.—Charlemagne (A.D. 768–814), the first Frankish king who became Roman Emperor, was crowned in A.D. 800 at Rome by the Pope, and ruled over the land of the Franks, which included central Germany and northern Gaul, and he also established the Frankish dominion over southern Gaul and northern Italy (p. 252). He restored civilisation in a great measure to Western Europe, and was a patron of architecture and the allied arts. On Charlemagne's death in A.D. 814, his empire crumbled to pieces and the German princes demanded the right to elect their own sovereign, and Conrad I (A.D. 911–919) reigned as King of Germany. Henry the Fowler (A.D. 919–936) drove the Magyars out of Saxony, subjugated Bohemia and the tribes between the Elbe and the Oder, thus again establishing a united Germany. Otto the Great (A.D. 936–973) was crowned King at Aix-la-Chapelle, and his wars, including his conquest of Lombardy (A.D. 951), made him the greatest sovereign in Europe, and in A.D. 961 he received the Imperial crown at Rome; but for two centuries after his death the royal authority remained weak. His power is reflected not only in the extent of his empire, but also in the number of important buildings erected in his dominions. When Conrad II in A.D. 1024 became King of Germany, Denmark, under Canute the Great, threatened his power on the north, and Poland and Hungary on the east, but he inaugurated the great Imperial age, by restricting the power of both secular and ecclesiastical princes.

After wars between rival claimants, Conrad III in A.D. 1138 became the first of the Hohenstaufen dynasty and was followed by Frederick Barbarossa (A.D. 1152–90), who was also crowned Emperor at Rome. He reduced Denmark and Poland, secured the alliance of Hungary and negotiated with France and England, but his interference in papal schisms brought disaster, till Emperor and Pope were reconciled under Gregory VIII. The position of Germany was again reasserted in Europe by the brilliant Frederick II (A.D. 1218–50), who united in himself the crowns of the Holy Roman Empire, Germany, Sicily, Lombardy, Burgundy, and Jerusalem. The political connection of the Hohenstaufen (or Swabian) Emperors (A.D. 1138–1273) with Lombardy is evidenced in the similarity of the architecture of the two countries during the Romanesque period.

2. ARCHITECTURAL CHARACTER

German Romanesque architecture dates from the eighth to the twelfth century. The style, owing to historical influences (as mentioned above), bears a striking similarity to that of Lombardy, and in some instances lasted as late as the middle of the thirteenth century, more especially in the Rhineland and Saxony, where it is found in its most highly developed form.

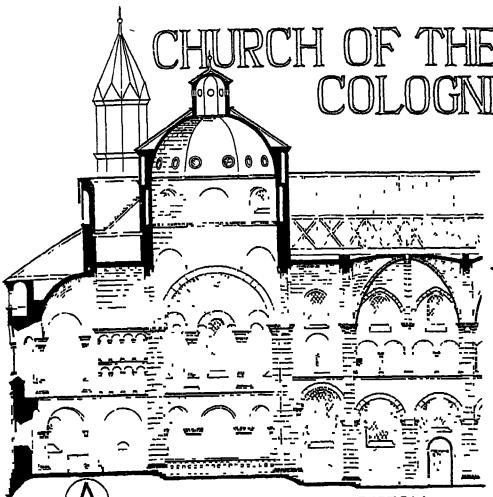
Church plans are peculiar in having both western and eastern apses (p. 292 J), and thus there are no great western entrances as in France. The reason for these double apses has never been thoroughly explained; some think that the eastern apse may have been used for the abbot and monks and the western apse for the bishop and laity, or that the western apse may be the survival of the detached baptistery which had been usual in earlier churches. The general character is picturesque by reason of numerous circular and octagonal turrets, polygonal domes, and arcaded galleries under the eaves (p. 292 F). Doorways were placed laterally in the aisles and are the most richly ornamented features of the churches, with shafts and capitals boldly and effectively carved. Vaulting appears not to have come into use in the Rhenish churches until some fifty years after its general adoption in France.

3. EXAMPLES

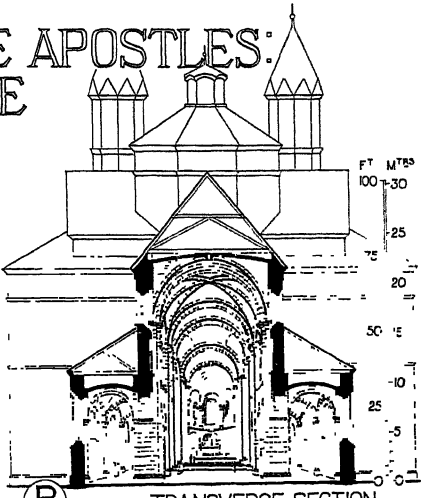
Aix-la-Chapelle Cathedral (A.D. 796–804) (p. 231 E, F, G), built by the Emperor Charlemagne as his royal tomb-house, resembles S. Vitale, Ravenna (p. 231 C, D). The entrance, flanked by staircase turrets, leads into a polygon of sixteen sides, 105 ft. in diameter. Every two angles of this polygon converge on to one pier, and thus form an internal octagon, the eight piers of which support a dome 47 ft. 6 ins. in diameter, rising above the two-storeyed surrounding aisles. The building has been much altered since the time of Charlemagne, for the Gothic choir was added (A.D. 1353–1413), the gables date from the thirteenth century and the lofty outer roof of the octagon from the seventeenth century. The surrounding chapels are of the fourteenth and fifteenth centuries and the western steeple has been added in recent years (p. 231 F). The building is of historic interest as the prototype of other similar churches in Germany, but more especially as the place of coronation of the Holy Roman Emperors.

Gernrode Abbey (A.D. 958–1050) has nave, covered by a wooden roof,

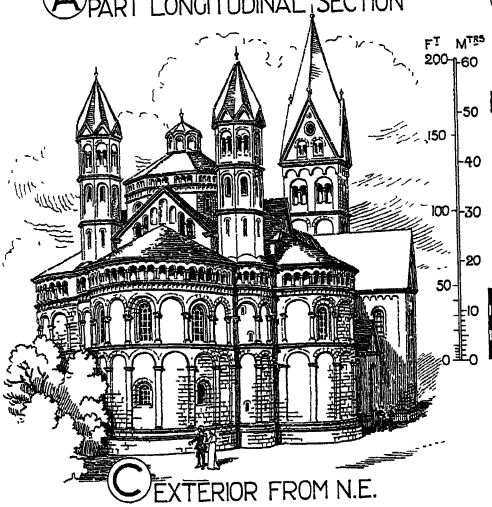
CHURCH OF THE APOSTLES: COLOGNE



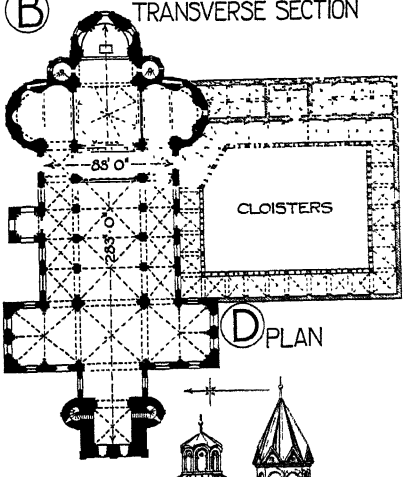
A PART LONGITUDINAL SECTION



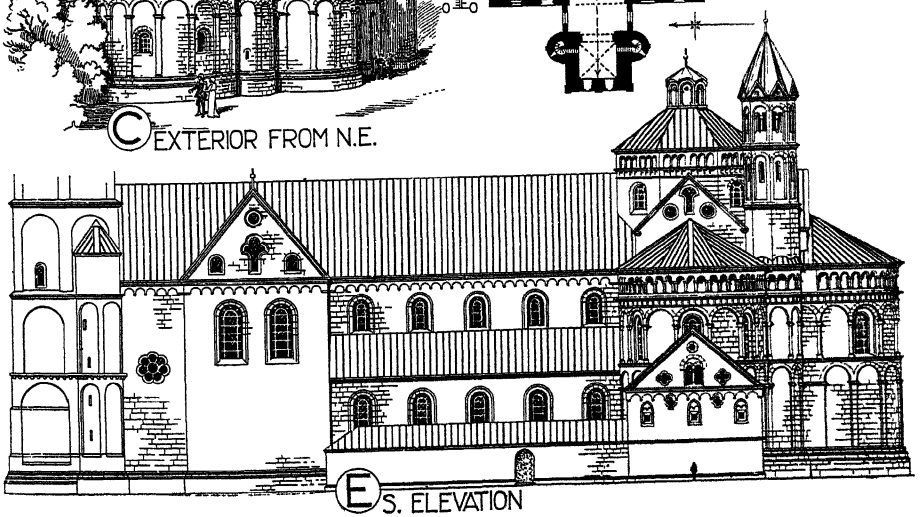
B TRANSVERSE SECTION



C EXTERIOR FROM N.E.

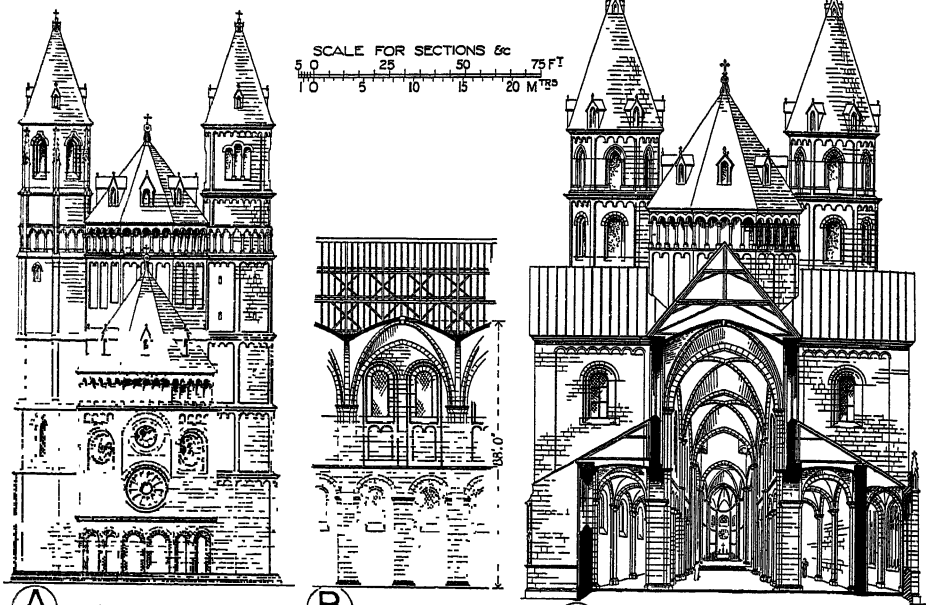


D PLAN



E S. ELEVATION

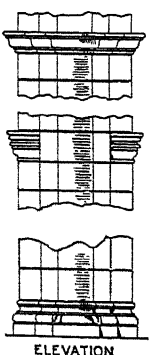
WORMS CATHEDRAL



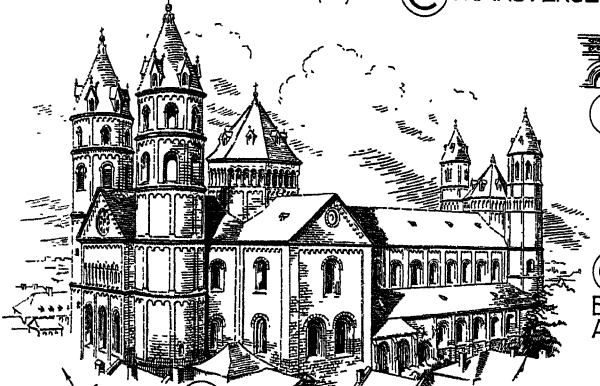
A WESTERN APSE

B NAVE BAY (INT.)

C TRANSVERSE SECTION x-x



E NAVE PIER



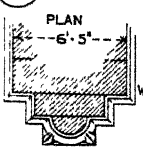
F EXTERIOR FROM N.E.

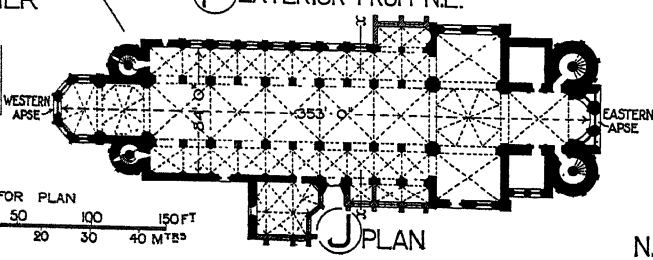


D CORNICE (EXT.)

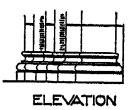


G EXTERNAL ANGLE OF CHOIR





J PLAN





H JAMB OF N. DOORWAY

aisles, and a fine triforium, and is probably the earliest instance of a church with an apse at both ends, a feature peculiar to Germany.

The **Monastery of S. Gall** (c. A.D. 820) (pp. 244, 248), though in Switzerland, is a typical German Benedictine monastery of the period. A complete plan found in the seventeenth century appears to have been prepared by Eginhardt, Charlemagne's architect, and shows a double-apse church with cloisters, abbot's lodging, school, refectory, dormitory, guest-house, dispensary, infirmary, granaries, bakehouses, orchard, and cemetery—thus showing the thoroughness with which every need was provided for in the planning of a monastic colony.

S. Godehard, Hildesheim (A.D. 1133), and **S. Michael, Hildesheim** (A.D. 1150–1241), have nave arcades in which square piers and columns are used to support semicircular arches.

The **Church of the Apostles, Cologne** (A.D. 1220–50) (p. 291), is one of the series of triapsal churches in that city. The plan consists of a broad nave, aisles half its width, western transepts, and a triapsal choir, while over the crossing a low octagonal tower gives dignity to the effective external grouping (p. 291 C). The entrance is by a northern porch, and there is no great western portal as in France, the west end being occupied by a tower flanked by stair turrets, crowned with a typical Rhenish roof. The triapsal end has wall arcading in two storeys crowned with the characteristic eaves arcade, and on the south side are the cloisters.

S. Maria im Capitol, Cologne (rebuilt A.D. 1047), **S. Martin, Cologne** (A.D. 1150–70), and **S. Cunibert, Cologne,** are other triapsal churches.

Worms Cathedral (A.D. 1110–1200) (p. 292) vies with the **Cathedrals of Spires** (A.D. 1030) and **Mayence** (A.D. 1036) as a representative church of this period. The plan is apsidal at both ends, with eastern and western octagons, while one vaulting bay of the nave corresponds with two of the aisles, and cross-vaults are employed in both cases (p. 292 C, J). Twin circular towers containing stairs flank the eastern and western apses, and the crossing of the nave and transept is covered with a low octagonal tower, crowned with a pointed roof. The entrances are in the aisles, a position which found favour both in Germany and England. The lateral façades have circular-headed windows, between the characteristic flat pilaster strips.

Laach Abbey (A.D. 1093–1156) has a church of the Benedictine Order. The plan differs from most others because on either side of the western apse, which is used as a tomb-house, are entrances from the great square atrium which still exists, and there are also three eastern apses. The vaulting bays of nave and aisles are of the same width, which shows an advance towards the Gothic system. The exterior is a fine grouping of six towers, double transepts, and east and west apses.

Lübeck Cathedral (A.D. 1173) is an example of the brick architecture peculiar to north-west Germany; but the Gothic choir and aisles were not added till A.D. 1335 (p. 488).

Trèves Cathedral (A.D. 1016–47) (p. 297) is reminiscent of the antiquity and importance of the city which, in the fourth century, was the residence of Roman Emperors, and for nearly 1,500 years remained the seat of Bishops, Archbishops, and Electors. The cathedral succeeded a basilican church several times destroyed by Franks and Normans, but rebuilt and enlarged in the eleventh century. It has an eastern apse and also a western apse flanked by entrances, and forms an important group with the Liebfrauenkirche, which is described in German Gothic (p. 484).

Germany is remarkable for two-storeyed churches, generally attached to castles, as at Nuremberg, Landsberg, and Steinfurt in Westphalia. It is supposed that the upper church was used by the Prince and his retinue, and the lower by his retainers, but in some instances the upper church may have been provided in case of floods.

4. COMPARATIVE ANALYSIS

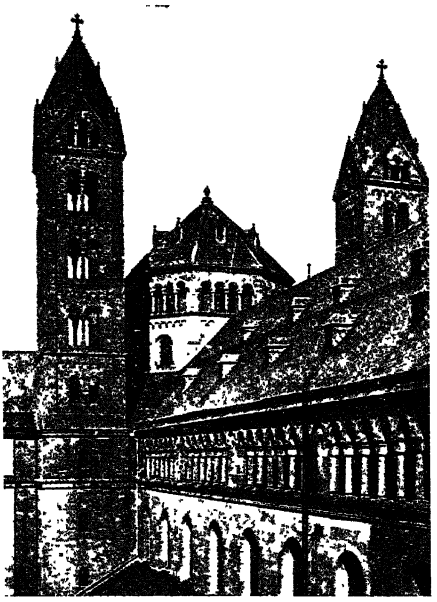
A. **Plans.**—Naves and aisles of churches are vaulted in square bays, one vaulting bay of the nave being equal to two of the aisles, as in Worms Cathedral (p. 292 J), and the Church of the Apostles, Cologne (p. 291 D). The plans of churches are complicated by the multiplication of towers, transepts, and apses at either end, while the choir is always apsidal and often raised, as in Lombardy, to admit of a crypt beneath. Apses also frequently terminate the western end of the nave, as at Worms (p. 292 J) and Laach, and churches are sometimes triapsal, as the Church of the Apostles, Cologne (p. 291 D), while in others there are also western transepts with towers over the crossing. Towers, square, circular, or polygonal, numbering often as many as six, two at the east end flanking the apse, and two similarly at the west end, give a varied skyline to churches (p. 296 K).

B. **Walls.**—The plain wall surface is relieved by pilaster strips, derived from Classic Roman art, connected horizontally at different stages by ranges of arches on corbels which, owing to the smallness of scale, have the appearance of moulded string courses (pp. 291 C, 292 F, 296 K). Open arcades, the origin of which has already been considered, are frequent under the eaves of roofs, especially round apses (p. 291 C). Churches usually have a triforium and always a clear-story (p. 291 A).

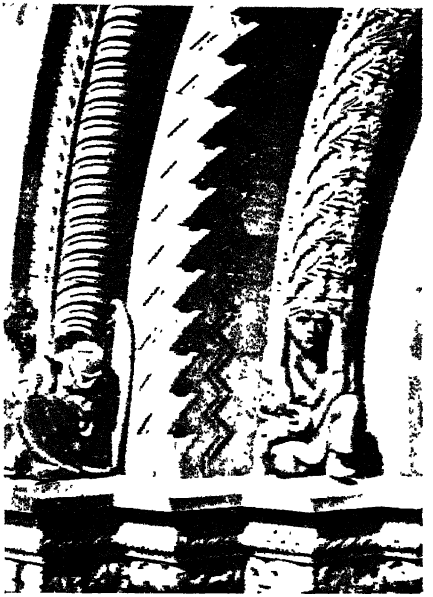
C. **Openings.**—Nave arcades are frequently unmoulded and the semicircular arches spring from piers (pp. 291, 292) or cylinders, while alternate piers are sometimes carried up to support the vault ribs (pp. 291 A, 292 B). Cloisters frequently have small columns supporting arches in groups of three (p. 296 P). The eaves galleries (p. 291 C), borrowed from Lombardy, are special features, sometimes carried entirely round the church, as at Spires (p. 295 A). Doorways are frequently in the side aisles instead of in the west front or transepts, and have recesses with nook shafts (p. 296 R, S, T). Windows are usually single, but occasionally grouped (p. 296 M), and sometimes have a mid-wall shaft (p. 296 H, Q), the germ of Gothic tracery windows.

D. **Roofs.**—In the Rhine district the semicircular cross-vault of the nave is of a domical nature, owing to the use of semicircular ribs, which rise to a greater height over the diagonal of the compartment. The system of including two bays of the aisle in one nave vaulting compartment was generally adopted (pp. 291 A, B, 292 B, C). Timber roofs were also employed for naves with large spans, as at Gernrode. Square towers, divided into storeys by moulded courses, frequently terminate in four gables with hipped rafters rising from the apex of each, and the roofing planes intersect at these rafters and thus form a pyramidal or " helm " roof with four diamond-shaped sides meeting at the apex (pp. 291 C, 296 K). Polygonal towers have similar roofs, but with valleys between the gables (p. 291 C), and all show the commencement of the evolution of spires which became the feature of the Gothic period.

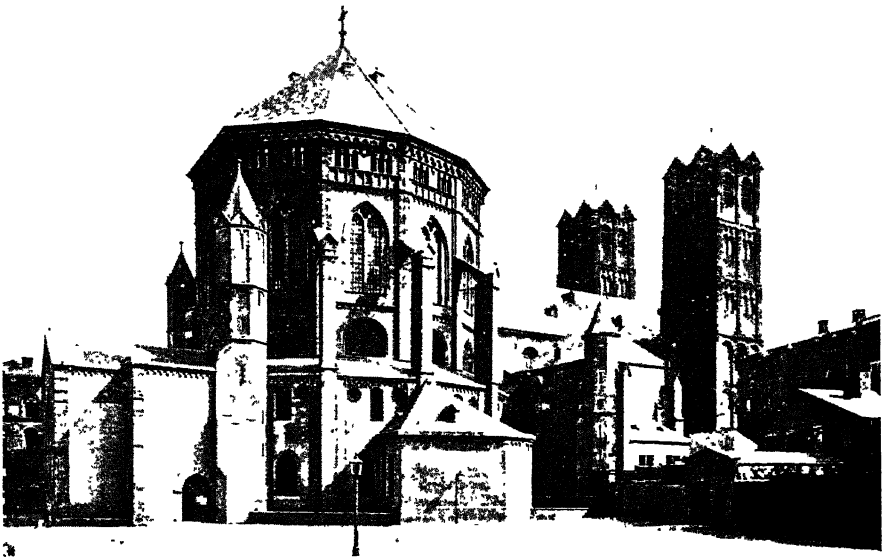
E. **Columns.**—In nave arcades square piers with attached half-columns were usual, though sometimes varied by the alternation of compound piers and cylinders, crowned by capitals bold in execution and well designed



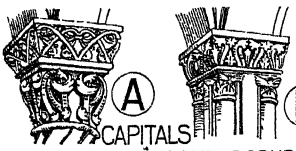
A. Towers and External Gallery Spires Cathedral



B. Detail of Doorway



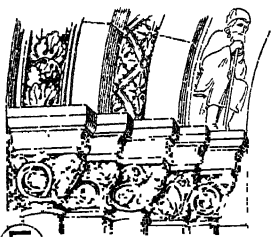
C. S. Gereon, Cologne, from S.



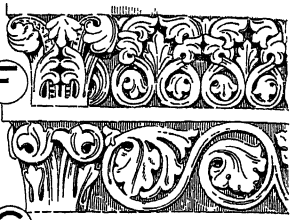
A B CAPITALS
ABBEY-CHURCH, CONRADSBURG.



C D CAPITALS
ILSENBURG : CONRADSBURG.



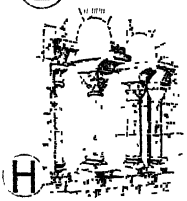
E CAPITALS: LIMBURG



F G ORNAMENT: LIMBURG.



K W. TOWERS: LIMBURG CATH.



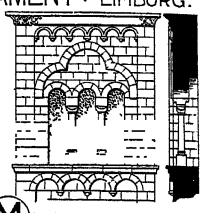
H WINDOW: GERNRODE



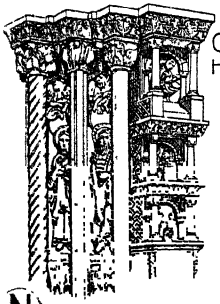
J COLUMN
HECKLINGEN



L COLUMN
ILSENBURG



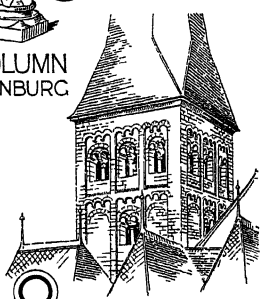
M WINDOW: LAACH



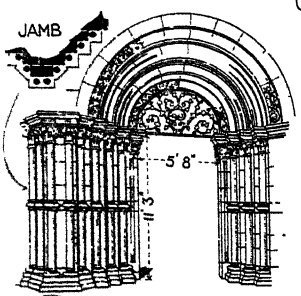
N PORTAL: BÂLE.



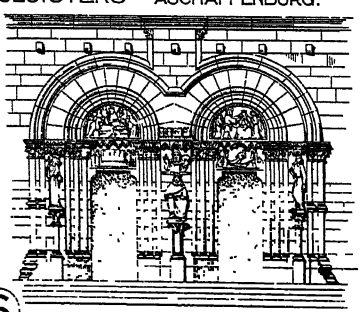
P CLOISTERS : ASCHAFFENBURG.



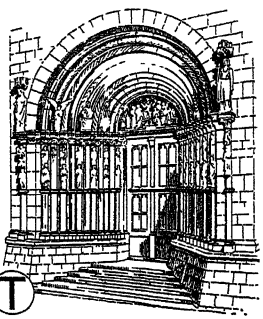
Q TOWER: S.COLUMBA, COLOGNE



R DOORWAY
S. MARTIN, WORMS.



S DOORWAY: STRASSBURG CATH.



T N.E. PORTAL: BAMBERG.

(p. 296 A, B, C, D). The shafts and capitals in doorways are frequently elaborately carved with figures of men, birds, and animals (p. 296 E, J, L, N).

F. **Mouldings** (p. 295 B).—There is a general absence of mouldings in nave arcades, which gives a bold appearance to interiors. When they occur, mouldings are as a rule of indifferent design, and those of capitals and bases take a distinctive form intermediate between Roman and Gothic.

G. **Ornament.**—Internally the flat wall surfaces were occasionally decorated in fresco, and the traditions of the Early Christian and Byzantine mosaic decorations were carried on in colour, or characteristic carving in bands was employed (p. 296 G), while externally the coloured bricks used in the north account for the absence of sculptured foliage. The sculpture is often well executed (p. 296 N), and the craftsmanship of this period is seen in the bronze doors of Hildesheim Cathedral (A.D. 1015), which are wrought in wonderful detail to represent the Creation, the Fall, and the Redemption.

5. REFERENCE BOOKS

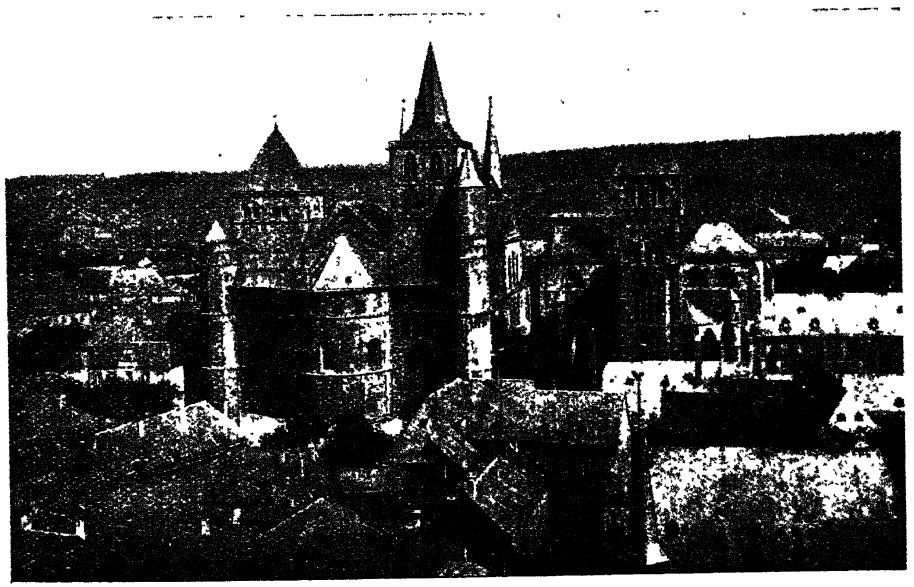
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Haupt (A. von).—" Die Baukunst der Germanen von der völkerwanderung bis zu Karl dem grossen." 1909.

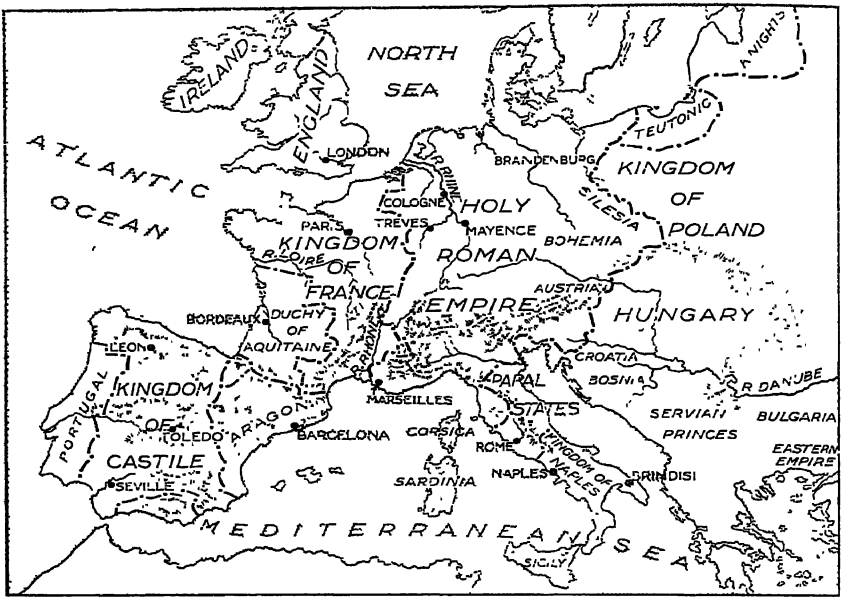
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TRÈVES CATHEDRAL AND THE LIEBFRAUENKIRCHE FROM W.



EUROPE IN THE 14TH CENTURY

GOTHIC ARCHITECTURE IN EUROPE

1. INFLUENCES

i. Geographical.—The various peoples of Western Europe, who had once been under the dominion and civilisation of Rome, had by the end of the twelfth century formed into separate nations, with a consequent new territorial distribution of the map of Europe. The Latin races of France, Italy, and Spain developed into independent kingdoms; Germany was the centre of the Holy Roman Empire; England, under her Norman kings, possessed large domains in France and was thus linked up with Western Europe; but Russia, Sweden, and Norway were little affected by this movement.

ii. Geological.—Geological conditions vary so much in Europe that they contribute a definite influence in differentiating the style according to countries; thus the white and coloured marbles of Italy, the coarse-grained stone of France and England, the brick of northern Germany and of Lombardy are all factors, as will be seen, in determining the character of the architecture of these countries.

iii. Climatic.—Climatic conditions, which, even in Europe, vary from north to south and east to west, have in all ages and countries had considerable influence in deciding the style of the architecture in any given district. Thus in the slanting rays of the northern sun the most effective shadows are cast by vertical features, such as the buttresses and pinnacles which surround

northern Gothic churches. The southern sun moves higher in the firmament and thus the deepest shadows are cast from horizontal cornices, and these are therefore frequently retained in Italian Gothic. Although this did not wholly determine the difference in treatment, it is interesting to observe that the highest development of Gothic architecture was achieved in northern latitudes. Climate, as will be seen, more especially affected the use of arcades and the size of door and window openings; while heavy snow-falls necessitated steep Gothic roofs in the north.

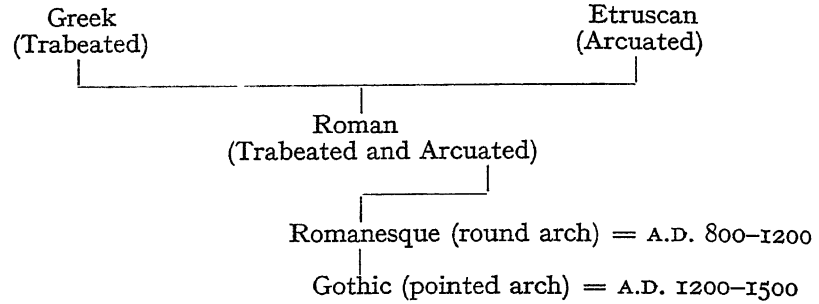
iv. Religious.—The conditions of the Christian Church and the rise of monastic communities precedent to the Gothic period have been dealt with under Romanesque architecture (p. 244). The immense power of the popes in the thirteenth century can be judged from the way they made and unmade emperors and kings and disposed of their dominions. The clergy, by reason of their learning, were prominent not only in spiritual but also in temporal affairs, and thus attracted wealth and power to the church. In Germany many of the abbots and bishops were princes of the Empire, and the Archbishops of Cologne, Trèves, and Mayence were among the Electors of the Holy Roman Empire. The periodical pilgrimages to shrines of local saints and of holy relics, and the various forms of an increasingly ornate ritual, influenced the plans of cathedrals. In England the adoration of the Virgin Mary was responsible for the introduction of Lady chapels, either as a prolongation of the eastern end, as at Salisbury (p. 332 E), or as a lateral addition, as at Ely (p. 332 A). The extension of the sanctuary to provide for the increase in the numbers of the clergy, chapels dedicated to special saints, processional ambulatories, chantry chapels for masses for the dead, all in turn modified and extended the original plan in the different countries.

v. Social.—The rapid growth of towns and the development of commercial activity, with the consequent increase of wealth, inspired a rivalry between neighbouring cities which was expressed in the erection of magnificent buildings both municipal and ecclesiastical. The countries of Europe developed along different lines according to the genius of the people, as set forth in the following chapters—English (p. 314), French (p. 436), Belgian and Dutch (p. 469), German (p. 483), Italian (p. 498), and Spanish (p. 525) Gothic architecture. In Germany towns united for mutual defence, as exemplified in the famous Hanseatic League. France and England were much under the heel of the feudal system, which retarded municipal activity but gave opportunity for domestic architecture. Italy was divided into republics and dukedoms, in which smaller cities were subject to the more powerful, and here they developed with greater freedom owing to disputes between the papacy and the Holy Roman Empire and to the comparative freedom of Italy from the feudal system.

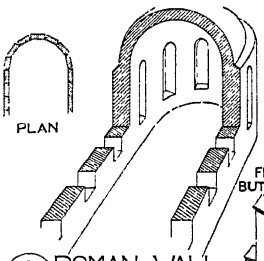
vi. Historical.—The principal historical events which influenced the architecture of the different countries are referred to in subsequent chapters; but, briefly, they were the loss of the English possessions in France, the gradual subjugation of the various provinces of France under one king, the disintegration of Germany into a number of independent states, the contests between the Moors and Christians in Spain, and the Latin conquest of Constantinople in A.D. 1203, which transferred the commerce of the East to the cities of Italy.

2. ARCHITECTURAL CHARACTER

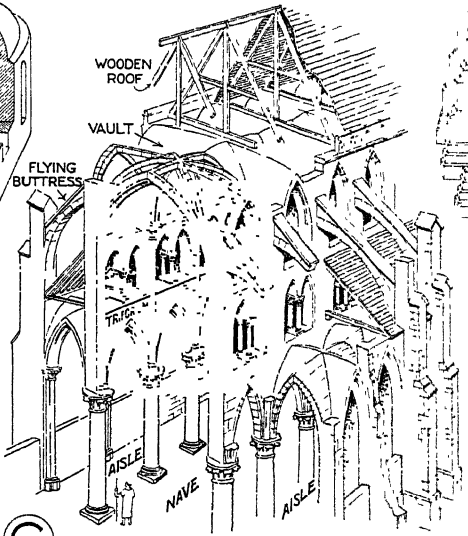
The following diagram emphasises the broad lines of the evolution of styles leading up to the Gothic architecture of Western Europe :



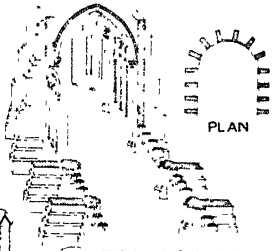
The architectural term " Gothic " was employed by Sir Christopher Wren in the seventeenth century as a term of reproach for this style of architecture, which had departed from those Classic lines which he was instrumental in re-establishing in this country. This term is now, by common consent, given to the Mediæval architecture of the thirteenth, fourteenth, and fifteenth centuries in Europe. The Gothic of the thirteenth century throughout Europe was slowly evolved from Romanesque architecture and is mainly distinguished by the introduction and general use of the pointed arch, whose original home was probably Assyria. This feature, in conjunction with buttresses and lofty pinnacles, gives to the style the aspiring tendency which has been regarded as symbolic of the religious aspirations of the period. Romanesque architects (p. 247) had already begun to substitute elasticity and equilibrium for the inert stability practised by the Romans, and Gothic architects still further extended the application of these static laws, by employing small stones laid in shallow courses with thick mortar joints, so as to secure the greatest amount of elasticity compatible with stability. The Gothic masons, throwing the rein on the neck of experiment, utilised stone to its utmost capacity, and in the later periods revelled in miracles of construction and marvels of craftsmanship. They heaped up stone in towers that. rising above the lofty roofs of naves and transepts, tapered upwards in slender spires embroidered with lace-like tracery. They suspended it overhead in ponderous vaults, ornamented so as to seem mere gossamer webs pierced by cunning pendants, which pleased the fancy of the fifteenth century, and which in reality sustain the very vaults from which they appear to hang. Finally, emboldened by success, they even ventured to cut granular stone as thin as fibrous wood. The stability of a Gothic cathedral depends upon the proper adjustment of thrust and counterthrust. The collected pressures of the nave vaulting and outer roof, which are downward owing to their weight and oblique owing to the arched form of the vault, are counteracted by arches carried above the aisle roofs to press against the nave wall, and these arches are supported by an outer line of massive buttresses weighted by pinnacles ; whereas in Roman buildings (p. 301 A) the wall system consists of solid walls enclosing the building and supporting a continuous vault, in a Gothic building (p. 301 B) the wall system consists of pieces of wall, or buttresses, at right angles to the building, to take the collected pressures of



A ROMAN WALL SYSTEM



C CONSTRUCTIVE PRINCIPLES OF THE MEDIÆVAL CHURCH



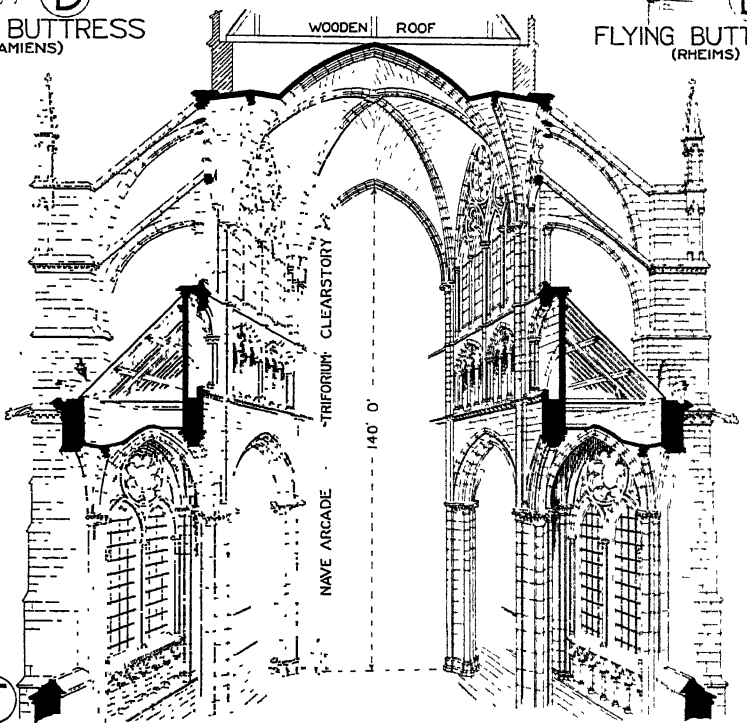
B GOTHIC WALL SYSTEM



D FLYING BUTTRESS (AMIENS)



E FLYING BUTTRESS (RHEIMS)



F TRANSVERSE SECTION OF A TYPICAL GOTHIC CATHEDRAL (AMIENS)

EVOLUTION OF GOTHIC VAULTING

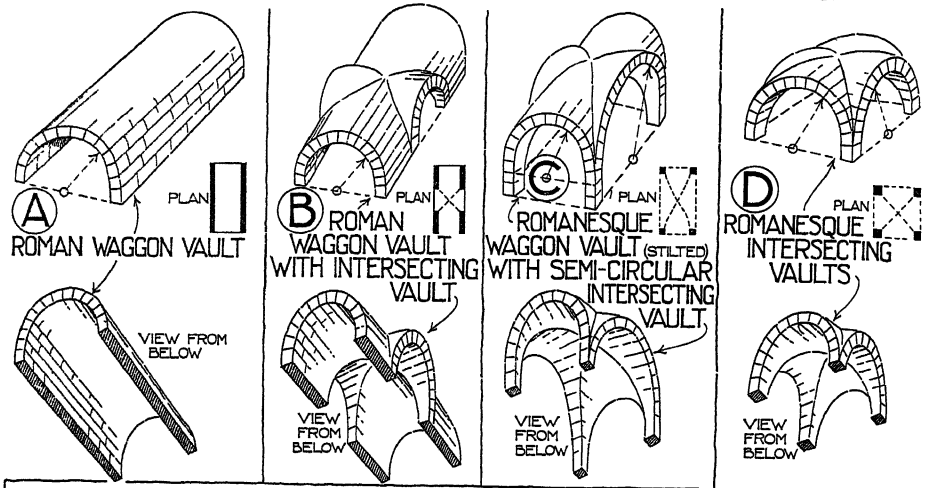
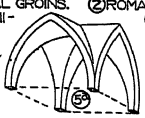
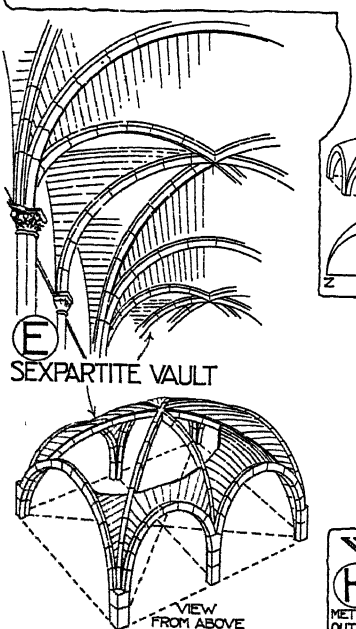
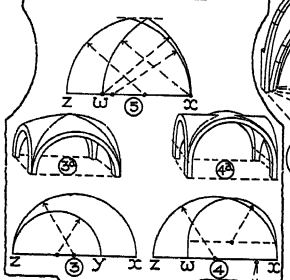
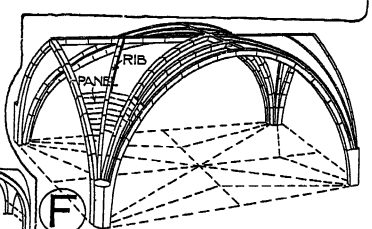


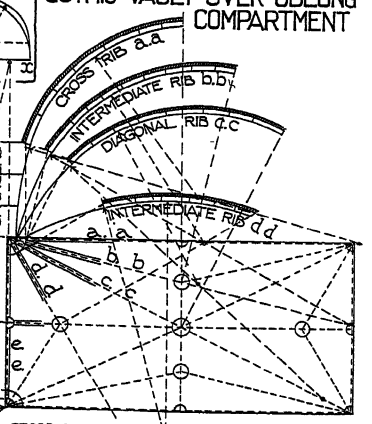
FIG. "G" IS THE PLAN OF A SQUARE VAULTING COMPARTMENT & FIGS 1-5. REPRESENT THE TRANSVERSE AND DIAGONAL RIBS, & ILLUSTRATE THE DIFFICULTIES OF REGULATING THE HEIGHT OF RIBS OF DIFFERENT SPAN OVER A SQUARE COMPARTMENT, AS THE PROBLEM IS TO KEEP THE CROWNS OF THE INTERSECTING VAULTS LEVEL. ① ROMAN CROSS VAULT WITH ELLIPTICAL DIAGONAL GROINS. ② ROMANESQUE RIBBED VAULT WITH SEGMENTAL DIAGONAL RIBS. ③ ROMANESQUE RIBBED VAULT WITH SEMI-CIRCULAR DIAGONAL RIB & TRANSVERSE RIBS RESULTING IN A DOMICAL VAULT 3ª. ④ ROMANESQUE VAULT WITH SEMI-CIRCULAR DIAGONAL & TRANSVERSE RIBS, THE LATTER STILTED TO AVOID DOMICAL VAULT AS 4ª. ⑤ GOTHIC RIBBED VAULT WITH POINTED ARCHES WHICH CAN BE MADE ANY HEIGHT FOR ANY SPAN THUS OVERCOMING ALL DIFFICULTIES AS 5ª.





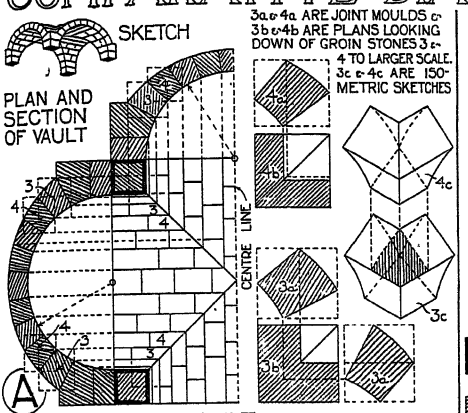




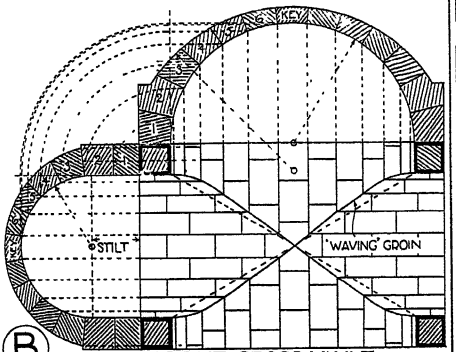


H
METHOD OF SETTING OUT PROFILES OF WALL, DIAGONAL, INTERMEDIATE, CROSS & RIDGE RIBS FROM THE PLAN DIFFERENCE OF SPAN ACCOMMODATED BY USING POINTED ARCHES OF DIFFERENT RADII.

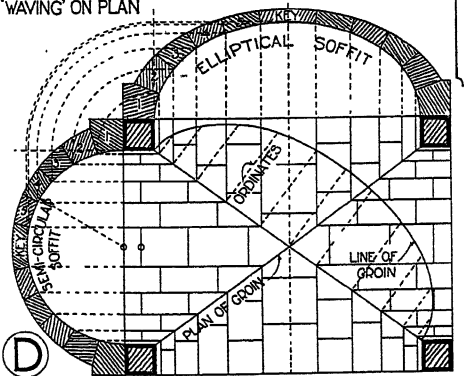
COMPARATIVE DIAGRAMS OF VAULTS



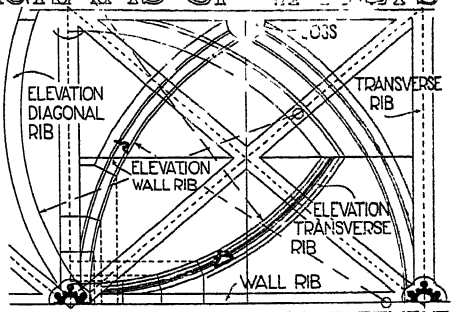
A ROMAN CROSS VAULT: THE COMPARTMENT IS SQUARE AND SEMI-CIRCULAR VAULTS OF EQUAL HEIGHT MAKE THE LINE OF GROIN STRAIGHT ON PLAN



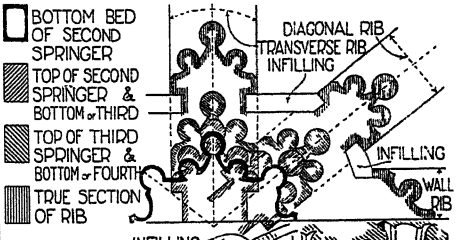
B ROMANESQUE CROSS VAULT: OBLONG COMPARTMENT & SEMI-CIRCULAR VAULTS OF UNEQUAL SPAN. THE LESSER VAULTS STILTED MAKING LINE OF GROINS 'WAVING' ON PLAN

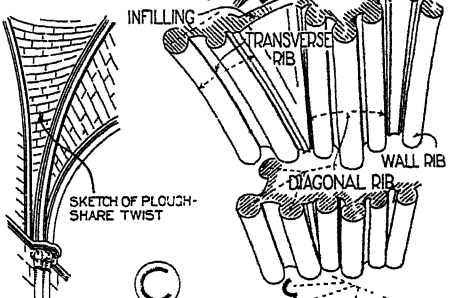


D RENAISSANCE CROSS VAULT: OBLONG COMPARTMENT & INTERSECTING VAULTS OF UNEQUAL SPAN BUT EQUAL HEIGHT OBTAINED BY USE OF CO-ORDINATES GROIN LINES STRAIGHT ON PLAN



PLAN OF ONE VAULTING COMPARTMENT

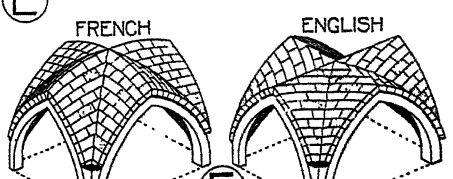




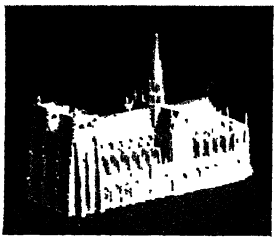
C GOTHIC CROSS VAULT SOUTHWARK CATH^DL
SETTING-OUT OF TRANSVERSE, DIAGONAL & WALL RIBS



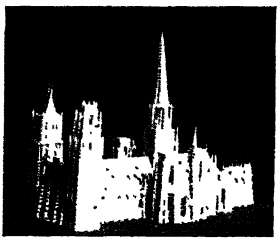
E 'CIRCE' OR MOVABLE CENTRE



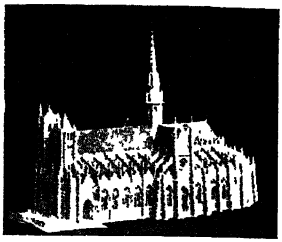
F METHOD OF INFILLING



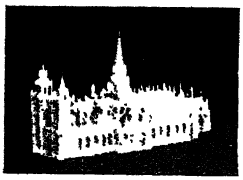
A. Notre Dame, Paris



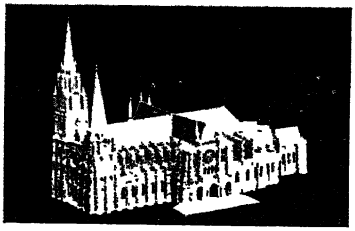
B. Rouen



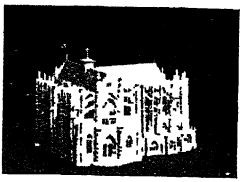
C. Amiens



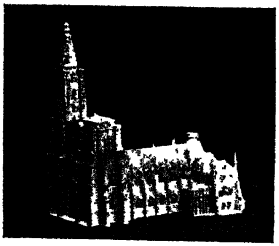
D. Evreux



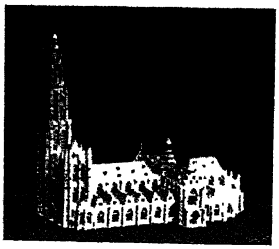
E. Chartres



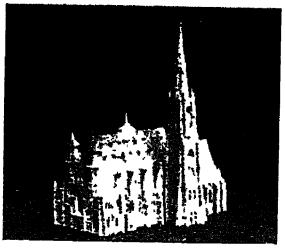
F. Beauvais



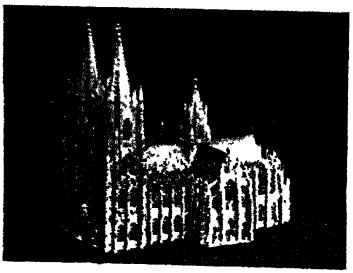
G. Strassburg



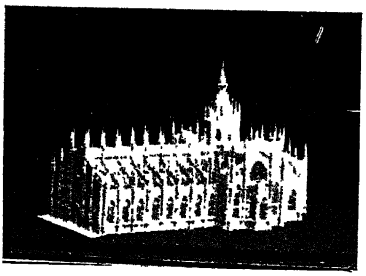
H. Antwerp



J. Vienna



K. Cologne



L. Milan

Comparative Models of Continental Cathedrals

the ribbed vault. This structural contrivance of transmitting the accumulated pressures to the ground is known as a "flying buttress." The entire structure consists of a skeleton of piers, buttresses, arches, and ribbed vaulting, all held in equilibrium by the combination of oblique and vertical forces neutralising each other, as is clearly shown by the illustrations which explain the constructive principles (p. 301). The walls were thus merely required to enclose and not to support the structure, and indeed they principally consisted of glazed windows with vertical mullions and traceried heads. It is evident that the development of this complicated system of construction would have been impossible apart from the use of such material as could be laid in the small stones with thick mortar joints, which were necessary to give elasticity to the structure. These principles led to much novelty in the treatment of capitals and piers; for the vaulting ribs, collected at intervals, were supported on capitals shaped to fit them, and shafts, when continued to the ground, modified the form of the nave piers of which they formed a part. The difficulties in the quarrying and transport of stone, which resulted from the social and industrial conditions of the age, taught the Gothic architects economy in the use of materials, and there was consequently less waste in the working of stone in Mediæval than in Classic times. Gothic architecture, in common with Greek, relies on the evident truthfulness of its structural features, which in both styles are component parts of the artistic scheme. The self-contained Greek temple, however, is reposeful in the repetition of its columns and the severity of its horizontal entablatures, whereas the Gothic cathedral is a complex, restless structure composed of many vertical features, to which unity was given by a due observance of relative proportions. Thus in Gothic architecture the features were not left to mere artistic caprice, but were in the main determined by stern structural utility, as exemplified in the novel shape of a capital specially designed to support a novel superstructure, and in the ribs of vaults which accurately express their function as sinews to support the vaulting panels. Although most of the forms were founded primarily on structural necessity, others were the expression of artistic invention; thus the spire fulfilled no structural requirement, but it served as a symbol and formed an outward and visible expression of the religious aspirations of the time and directed the thoughts of men heavenwards. The Roman military organisation was not available in the Gothic period and stone from various quarries had to be transported, often on pack-horses, by labourers who were taken away ever and anon for feudal military service. Gothic architects had not at their disposal either the monumental marble of the Greeks or the massive blocks of stone of the Romans, for the stone had to be split into smaller pieces for easy transport; thus they were compelled to erect large buildings with small stones, whereas the Greeks had erected small buildings with large blocks of marble, conditions which naturally differentiated their architecture.

The evolution of vaulting from Roman to modern times is an interesting subject which can be clearly explained by diagrams (pp. 301, 302, 303, 324). The Roman system of vaulting, comprising the waggon and the intersecting vault (p. 302 A, B), was continued in the Romanesque period (p. 302 D), but an innovation was introduced by placing a vault over an oblong compartment of a church nave (p. 302 C), when difficulties occurred owing to the differences in height between semicircular arches over spans of varying width. The illustrations (p. 302 G) give the several means of overcoming the difficulty, which was only entirely surmounted when the pointed arch was

introduced (p. 302 F, H). A careful study of the illustrations (pp. 302, 303) will clearly demonstrate the various problems encountered in the evolution from the Roman vault to the ribbed Gothic vault over an oblong compartment. The setting-out of one compartment of a Gothic vault is given, with plans at different levels of the springers (p. 303 C), and the method of obtaining the outline of the various ribs is also shown (p. 302 H). This use in vaulting of the pointed arch—always regarded as the chief visible characteristic of Gothic architecture (sometimes called for that reason the "Pointed" style)—is the most probable of various suggested origins of this form, such as its occurrence in intersecting arcades common in Romanesque buildings, or the familiarity of Mediterranean peoples with Saracenic art.

Gothic vaulting, it will be seen, consists of a framework of stone ribs, which support thin stone panels—a system which was an extension of the Romanesque method which had itself been evolved from the Roman. The ribs were constructed as permanent supports and on them the thin stone panels were laid, being supported temporarily on a movable centre sometimes known as a "circe" (p. 303 E). The difficulty of vaulting oblong compartments was overcome by the use of the pointed arch over the shorter spans, while the semicircular arch was for some time retained for the diagonal or longer spans. The licence which Gothic masons allowed themselves in the treatment and disposition of ribs, with which they spun an intricate web of many strands, makes the evolution of Gothic vaulting a most fascinating study. Vault thrusts are considered in the chapter on English Mediæval architecture (p. 327), and it is sufficient to say here that the vault pressures were both downwards by the weight of the stone, through the action of the law of gravitation, and outwards by the pressure of the arch voussoirs; both pressures were collected by the meeting of the ribs at the angles of vaulting compartments, and the resultant oblique pressure was then counteracted and transmitted to the ground by buttresses and flying buttresses weighted by pinnacles (pp. 301, 404, 438 C, 441 A, 462 A). The evolution of Gothic vaulting in England is referred to later (p. 327).

As a result of the development of the Gothic system of buttresses, walls became unnecessary as supports; but they naturally continued to enclose the building and protect it against the elements. Another step in the evolution of the style was made possible by the invention of painted glass, which was forthwith used to form brilliant transparent pictures in the ever-recurring windows which were enclosed under the pointed vaults, which had, as already explained, been originally adopted for constructive reasons. The stonework of traceried windows in churches was merely a frame for pictures of incidents in Bible history. The brilliant translucent windowed walls of a Gothic cathedral rival in beauty the painted hieroglyphics of Egyptian temples, the sculptured slabs of Assyrian palaces, the paintings and sculpture of Greek temples, the frescoes of Roman thermæ, and the mosaics of Byzantine and Romanesque churches. In the north of Europe the windows stretched from buttress to buttress, and thus provided full scope for the use of glowing painted glass as the chief internal decoration, and it followed that walls were kept uniformly flat internally so that the coloured windows might be seen by all; while structural features, such as buttresses and pinnacles, were placed externally (p. 301).

3. EXAMPLES

CATHEDRALS

Cathedrals in Mediæval times occupied the place of first importance in national life, and men were engaged on their construction from one generation to another. They were the history books of the period when few people could read, and thus were a medium of popular education; they took the place in the social state of such modern institutions as free schools, libraries, museums, picture galleries, and concert halls. Sculpture and painted glass reflected incidents of Bible history from the Creation to the Redemption of mankind, and this pictorial presentment was peculiarly adapted for people to whom the written word was a sealed book. The virtues and vices, surrounded by all the imagery of Mediæval symbolism, were depicted in sculptured figure and coloured glass before the gaze of the passing people, and the moral was pointed for the encouragement or warning of all by representations, often crude and realistic, of the rewards or punishments that might be expected to result from the practice of the particular virtue or vice. Saints with devout mien and angels of joyful aspect carried the thoughts of men to a future and higher life; while all the manifold energies of mankind, as expressed in the various handicrafts of peace and war, were represented in cathedral wall and window to stimulate energy and action in daily life. Thus do we see how true it is that Mediæval architecture is a grand chronicler also of secular history in which kings, nobles, knights, and people were represented as playing their part in their day and generation. Continental cathedrals (p. 304) form an interesting comparison, in their design and proportion, with English cathedrals (pp. 329, 330, 331).

Church plans in England (pp. 332, 333, 334, 335), France (p. 460), Belgium (p. 471 F), Germany (p. 486 H), and Italy (p. 501 C) are generally in the form of a Latin cross of which the short arms form the north and south transepts. The derivation of this cruciform plan is conjectural, and has been the subject of various theories of origin. It may have been formed from the plan of the Early Christian basilican churches, such as old S. Peter, Rome (p. 206 C), and S. Paolo fuori le Mura (p. 206 E), by the extension of the "bema" into well-marked transepts; or it may have been suggested by the cruciform tombs of the period of Constantine (p. 216 G). Whatever its origin, there is no doubt that its complicated development during the Mediæval period was due to the practical requirements of an increasingly ornate and ceremonial ritual. The main body of the church generally stretches westward and the choir and sanctuary eastward from the "crossing" of nave and transepts, which is often marked externally, especially in England, by a tower, sometimes tapering into a spire. These main divisions east and west, and the transepts north and south, are often further divided into central nave with side aisles, separated by columns or piers. The principal entrance is generally either at the west, as in France, where it is flanked by towers (p. 445 G), or on the south or north side, as in England, where it is protected by a porch (p. 334 B). The columns or piers which separate nave and aisles support the nave arcades and the walls which rise above the aisle roofs (p. 301 C, F). Above is the triforium or "blind storey," which is the space beneath the sloping roof over the aisle vault and enclosed on the nave side by a series of arches. Above the triforium is a range of windows to light the nave, called the "clear-story," probably from the

French word " clair." By means of cross vaults these clear-story windows generally rise to the level of the ridge of the nave vault, which is covered by a high-pitched wooden roof.

The eastern arm or the choir, reached by steps from the nave level, is generally the most ornate part of the church.

The interior of a Gothic cathedral has been thus described :

" The tall shafts that mount in massy pride,
Their mingling branches shoot from side to side ;
Where elfin sculptors with fantastic clue
O'er the long roof their wild embroidery drew ;
When superstition, with capricious hand,
In many a maze, the wreathèd window planned,
With hues romantic tinged the gorgeous pane,
To fill with holy light the wondrous fane."

In England, although the general preference was for a square end to the sanctuary, many cathedrals when rebuilt in Norman times were given a circular end, which was sometimes partially developed into a chevet (p. 863). This may still be distinguished in the plans of Peterborough, Norwich, Canterbury, Gloucester, Lichfield, Ely, Winchester, Durham, S. Albans, and Chester (pp. 332, 333, 334, 335). Many cathedrals were enlarged in later years and were then given a square termination, thus reverting to the Anglo-Saxon usage. Westminster Abbey, built under French influence, is unique in England in having a chevet with complete ring of chapels (pp. 353 D, 358 A), and French cathedrals are generally finished with a distinctive circular chevet (pp. 437, 449, 460). The Lady chapel was added at the extreme east end, as at Norwich (p. 333), Exeter (p. 334), York (p. 332), Salisbury (p. 332), and Gloucester (p. 333), or on one side as at Ely (p. 332).

The cloisters attached to many English cathedrals formed a part of the original monastic buildings and are generally in the most sheltered position, south of the nave and west of the transept, and served as a means of communication between different parts of the abbey and as a general meeting-place for members of the monastic community (pp. 332, 333, 334, 335). This is the general distribution of the various parts of a conventual cathedral church, from which there are many deviations such as the number of transepts and aisles, the position of entrances, chapels, choir, and presbytery, cloisters and chapter house. Milton has well expressed the devotional spirit and the sense of awe and solemnity enshrined in many an English cathedral in his beautiful verses :

" Let my due feet never fail
To walk the studious cloister's pale,
And love the high embowèd roof,
With antique pillars massy proof ;
And storied windows, richly dight,
Casting a dim religious light.
There let the pealing organ blow
To the full-voic'd choir below,
In service high and anthem clear
As may, with sweetness to mine ear,
Dissolve me into ecstasies,
And bring all heaven before mine eyes."

English cathedrals are conspicuous for great length in comparison to their width, and for central towers over the crossing, as at Gloucester, Canterbury, and elsewhere. Some English cathedrals, as Canterbury, York, and Ripon, also have western towers, which are usual in France,

as at Paris, Rheims, and Amiens. The long, low, and clearly marked outlines of English cathedrals, accentuated by the central tower, are in strong contrast with the short, lofty, and less strongly defined outlines of Continental cathedrals, with their intricacy of flying buttresses and profusion of encircling chapels (p. 438 C). English cathedrals owe much of their imposing appearance externally to their comparative detachment from surrounding buildings, as they often stand in an open space or Close, as at Canterbury, Lincoln (p. 347 A), and Salisbury (p. 345 B), or are picturesquely situated on a river, as at Worcester and Durham (p. 336 A), described by Scott as "Grand and vast that stands above the Wear"; or as at Winchester, Chichester, and Lichfield, which, as Milton so descriptively writes, are "bosom'd high 'mid tufted trees."

French cathedrals, on the other hand, are often surrounded by houses and shops, which, if not actually built against the church itself, are crowded so close to it as to detract from the dignity of the building, as at Chartres, S. Lo, and S. Omer. French cathedrals were popular rather than monastic in origin, and this accounts for the general absence of cloisters. Thus we see that there are some essential differences between English and French cathedrals (p. 457).

MONASTERIES

A general description of monastic establishments has already been given under Romanesque Architecture in Europe (p. 248).

PARISH CHURCHES

The parish churches both in town and country, erected throughout this period, were of a much less ambitious character than the cathedrals and monastic churches, but the origin and development of these smaller churches in England are of equal significance (p. 355), and the single western tower of the parish church is often the most striking landmark of the country-side.

SECULAR ARCHITECTURE

Castles and mansions of the nobles, manor houses of the gentry, dwellings of the people, hospitals, and other civil and domestic buildings are referred to under each country.

4. COMPARATIVE ANALYSIS

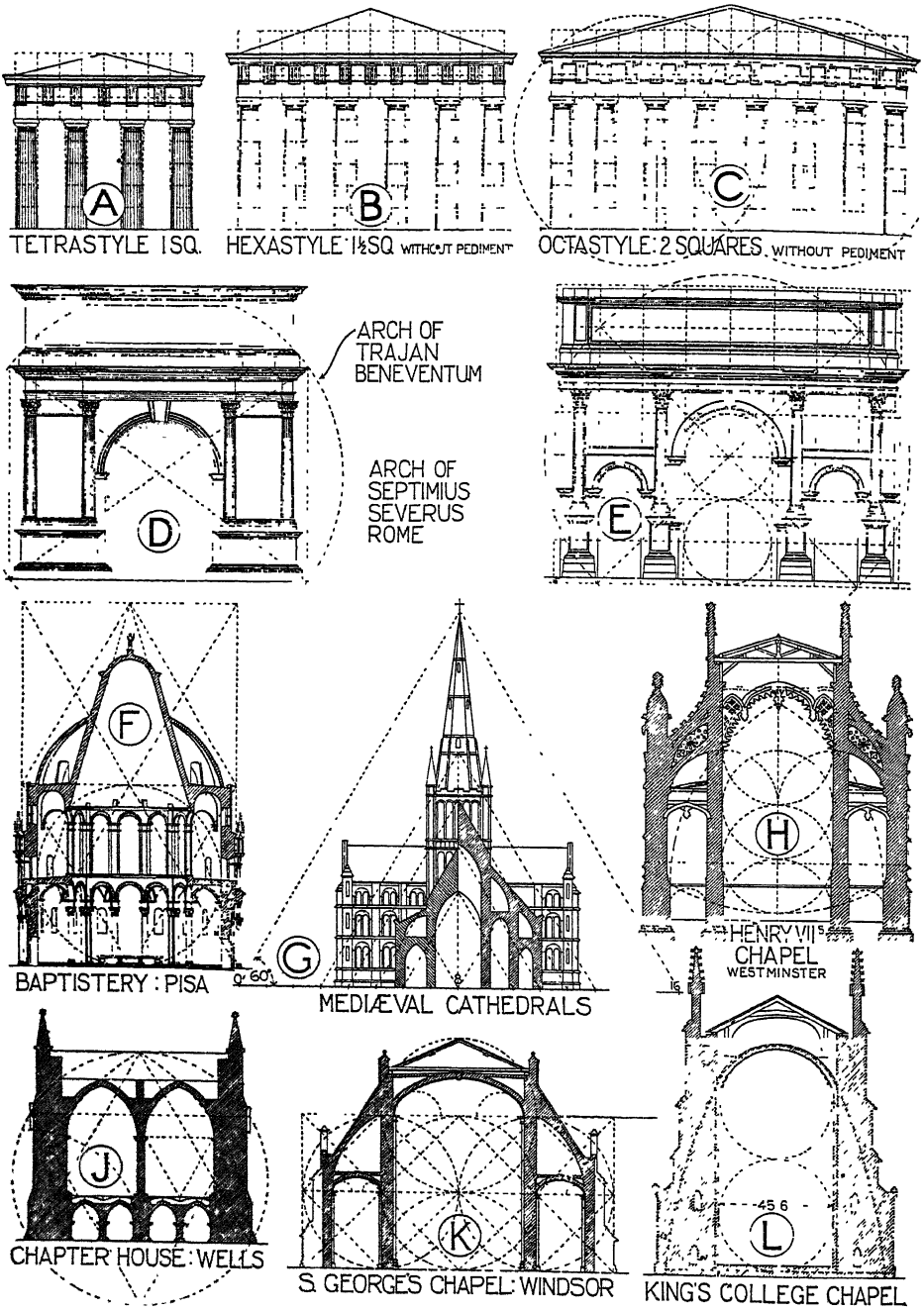
A comparative analysis of Gothic architecture in each country is given as follows: England (p. 400), France (p. 457), Belgium (p. 477), Germany (p. 488), Italy (p. 517), and Spain (p. 532).

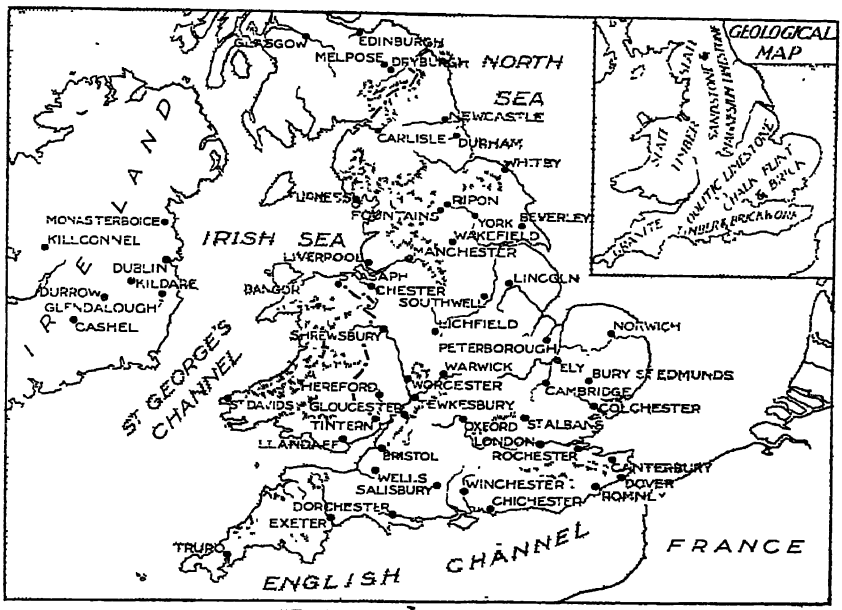
A comparative table of the underlying differences between the Gothic and Renaissance styles is given on p. 547.

5. REFERENCE BOOKS

Reference books relating to Gothic architecture in the different countries of Europe are given as follows: England (p. 426), France (p. 464), Belgium (p. 481), Germany (p. 494), Italy (p. 518), and Spain (p. 539).

PRINCIPLES OF PROPORTIONS





MEDIÆVAL ENGLAND

ENGLISH MEDIÆVAL ARCHITECTURE

ANGLO-SAXON, ROMANESQUE (NORMAN), AND GOTHIC

1. INFLUENCES

i. Geographical.—England, as an island in the North Sea, opposite the rich and populous continent of Europe, owed her national development both to her insular position and to her maritime intercourse with other countries. Her geographical position has thus given rise to a dual influence in the formation of national characteristics, the operation of which has varied at different periods. Thus, isolation by the sea continuously promoted the development of definite national characteristics, while intercourse with the Continent across the sea resulted from time to time in a marked importation of foreign ideas in architecture. England's splendid isolation cannot be described more trenchantly than in the verses of England's greatest poet :

> " England, bound in with the triumphant sea,
> Whose rocky shore beats back the envious siege.
> * * * * *
> This fortress built by nature for herself
> Against infection and the hand of war ;
> This happy breed of men, this little world,
> This precious stone set in the silver sea,
> Which serves it in the office of a wall,
> Or as a moat, defensive to a house,
> Against the envy of less happier lands."
>
> SHAKESPEARE
> " Richard II."

It is very different in these later and maturer times when England's inextricable connection with European affairs cannot be more forcibly exemplified than by the part she played in the Great War (A.D. 1914–19).

ii. Geological.—The varied geological formation of Great Britain was responsible for the variety of materials employed in building (p. 311). A band of oolitic freestone, including the well-known Bath stone, stretches diagonally across the island from Somersetshire to Lincolnshire, and supplies such excellent natural materials for all types of buildings in its vicinity that this geological influence is seen in the cathedrals along its course and in the fine manor houses of Wiltshire and Northamptonshire. The granites of Cornwall in the south-west and the sandstone of Yorkshire in the north were both so hard in texture as to admit of little sculptured ornament, and this gives severity to the architecture of these districts. It is natural that in early times the material at hand should have been employed, and this in itself gave local character, but as methods of transport improved there has been a tendency for local distinctions to disappear. In the Middle Ages transport by road was a difficult, slow, and costly undertaking when, in the absence of good roads and of wheeled vehicles, stone had to be carried on pack-horses, so water-carriage, by sea or river, was often preferred for economy; thus our island stone was easily supplemented by Caen stone from Normandy, as at Canterbury Cathedral and the Tower of London. A limited supply of marble from the Isle of Purbeck and elsewhere was also used, chiefly for clustered piers in churches, during the Early English period. The flint work of Norfolk, Suffolk, and part of the south coast gives pronounced local character to the churches of these districts, especially when, as in the Tudor period, the flints were "knapped" or split and shaped to form chequer work and traceried panels in walls. The fine oak forests of old England, especially in Lancashire, Cheshire, and Shropshire, provided another beautiful building material. Timber was specially serviceable for posts, beams, and braces of roofs, and for the fretted barge boards of gables, and it gives an intimate and attractive character to the half-timber houses which were such a marked development in the domestic architecture of later English Gothic (p. 386). Brickwork, which was an inevitable product of the clay in river valleys, had been made use of by the eminently practical Romans in their settlements in Britain; but this material fell into disuse till it was again requisitioned in the latter part of the thirteenth century, chiefly in low-lying districts around London and in the eastern counties. Little Wenham Hall, Suffolk (end of 13th cent.), is probably the earliest existing brick building of this period, and Hampton Court is a world-famous pile of sixteenth-century brickwork. Terra-cotta ornament, introduced by Italian craftsmen in the reign of Henry VIII, was employed by Giovanni da Majano for the medallion bas-reliefs at Hampton Court (p. 380) and by Torrigiano for the celebrated tomb in the Rolls Chapel, London; it also entered largely into the building of such houses as Layer Marney Towers, Essex (c. A.D. 1500–25), and Sutton Place, Guildford (A.D. 1523–25) (p. 385).

iii. Climatic.—The temperate and humid English climate, with its searching winds and driving rain, has had its effect upon the plan and certain features of buildings. Thus, whereas great western portals, opening direct into nave and aisles, are marked features of French cathedrals, porches in England are generally planned in the side aisles and are deep and narrow, so as to act as screens against the direct blast of the wind. The general dullness of the climate and the absence of strong sunlight con-

tributed to the increased size of traceried windows which in late Gothic often stretch, as in S. George's Chapel, Windsor, across the whole width of the nave. The high-pitched roof to throw off snow and rain was another result of climatic conditions, and gave full scope internally for these elaborate timber roofs which are essentially English, while externally it accentuated the aspiring character of Gothic design.

iv. Religious.—Christianity had first made its way into Britain during the Roman occupation, and henceforth religion ranks as a paramount influence in the development of the architecture of this country. The following events indicate the status and development of Christianity in Britain which influenced architecture along ecclesiastical lines.

A.D. 304. The Martyrdom of S. Alban, the first British martyr.

A.D. 314. The Bishops of York and London are recorded as attending the Council of Arles.

A.D. 449–607. Christianity was blotted out and churches destroyed during these years of the Anglo-Saxon settlements.

A.D. 597. S. Augustine landed in England, converted the Kentish King Ethelbert and other kings of the Heptarchy and their people, and introduced the Benedictine Order of monks into England.

A.D. 603. The See of London was revived and the See of Rochester founded.

A.D. 656. The Benedictine Monastery of Peterborough was founded.

A.D. 668–690. Theodore, Archbishop of Canterbury, divided England into bishoprics.

A.D. 674–684. Wilfred, Bishop of York, aided by Benedict Biscop, built churches of which remains still exist.

A.D. 700. Aldhelm of Sherborne built churches in the south, as at Bradford-on-Avon.

A.D. 790. The Benedictine Monastery of S. Albans was founded by Offa.

A.D. 871–899. King Alfred rebuilt monasteries destroyed during the Danish incursions.

A.D. 959–978. Dunstan, Archbishop of Canterbury, after directing the secular affairs of the kingdom, devoted himself to church government and the monastic revival.

A.D. 1017–35. King Canute founded the Monastery of Bury S. Edmunds.

A.D. 1061. Harold's collegiate church at Waltham consecrated.

A.D. 1042–66. Edward the Confessor's religious enthusiasm resulted in the building of Westminster Abbey.

A.D. 1066. William the Conqueror appointed Lanfranc Archbishop of Canterbury, and the newly imported bishops built magnificent cathedrals on the Norman model, though most English cathedrals formed part of monastic foundations (p. 244).

A.D. 1095. The First Crusade, preached by Peter the Hermit, followed by others, mark an era of religious zeal (p. 244).

A.D. 1129. The Knights Templars and the Knights of S. John were military religious orders—set up as a result of the Crusades—and they built a special type of round church (p. 245). The Cistercians built their first English monastery at Waverley, afterwards followed by Fountains and Kirkstall in Yorkshire.

A.D. 1174. William of Sens built the choir of Canterbury Cathedral.

A.D. 1181. The Carthusians built their first English monastery at Witham.

A.D. 1217. The Dominicans (Blackfriars) came to England and were followed in A.D. 1224 by the Franciscans (Greyfriars) and in A.D. 1229 by the Carmelites (Whitefriars) and all built spacious churches for preaching.

A.D. 1376. John Wycliffe asserted the freedom of religious thought, protested against the dogmas of the papacy, and proclaimed the English Bible, instead of the Catholic Church, as the spiritual guide of the laity.

A.D. 1371–1404. William of Wykeham, the originator of the Perpendicular style, carried on building at Winchester Cathedral and College, New College, Oxford, and elsewhere.

A.D. 1536–40.—Dissolution of the Monasteries, after which Henry VIII handed over many monastic estates to nobles and merchant princes, and this resulted in the erection of mansions and manor houses throughout England.

v. Social.

Pre-Roman period.

The earliest evidence of the existence of man on this island seems to be contained in the discovery of rudely shaped flint implements of the palæolithic age. Then in the neolithic age came the so-called Iberians with polished stone arrowheads, scrapers, and knives; and they built large stone, earth-covered "barrows" as sepulchral chambers. The great Celtic invasion followed in two successive waves, viz. Gaelic in the bronze age, and British in the iron age, and both in turn occupied the fertile southern parts of the island. The Celts, a branch of the Aryan family, were an enterprising race, sufficiently civilised to wear clothes with ornaments of gold, and to use metal weapons, besides being agriculturists, miners of tin and lead, and traders with other peoples. The megalithic circles of Avebury and Stonehenge (p. 3), often considered as monuments to the dead or as temples of the Druids, belong to this period.

Roman period (B.C. 55—A.D. 420).

B.C. 55. Julius Cæsar landed in Britain, and his expeditions recorded in his "Commentaries" were introductory to the subsequent Roman occupation.

A.D. 43. Britain finally became a Roman colony, and progress was made in developing her natural resources such as tin, iron, and lead mines, and the mineral waters of Bath and elsewhere were exploited. Agriculture received an impetus, due to improved methods and to the settled government maintained by the Roman legions, while Roman dress and language were adopted by those in contact with the new rulers. Where the Romans planted their standards, there they erected buildings to maintain their system of civil administration and social life; and in Britain, as in other Roman colonies, their building enterprise has been demonstrated by the excavation of forums, basilicas, baths, temples, and villas, as at Bignor (Sussex), Darenth (Kent), Corstopitum (Northumberland), Fifehead-Neville (Dorset), Silchester (Hants), Chedworth (Gloucester), and Bath. On the military side there are vestiges of fortifications in the city walls of London, York, Lincoln, and Colchester, and the affix "chester" (Latin, *castra* = camp) signifies a Roman military settlement, as Winchester, Leicester, Gloucester, and Exeter. Roman roads were not only important for military purposes, but also for promoting civilisation by opening communications between different parts of the country. The four great roads in England were: (*a*)

Watling Street from London to Wroxeter and northwards, via York to the Firth of Forth; (*b*) Ermine Street from London, via Colchester to Lincoln and York; (*c*) Fosse Way from Exeter, via Bath to Lincoln; (*d*) Icknield Street from Bury S. Edmunds to Southampton.

A.D. 75–85. Agricola, Governor of Britain, built forts from the Clyde to the Forth.

A.D. 120. Hadrian built his stone wall, 70 miles long, from the Tyne to the Solway Firth.

A.D. 143. The wall of Antoninus Pius was rebuilt on the line of the forts of Agricola.

A.D. 208–211. The Emperor Septimius Severus, during his four years in Britain, strengthened Agricola's forts as the northern limit of Britain, but on his death at Eboracum (York) Hadrian's wall again became the boundary.

A.D. 420. After the departure of the Romans much of their work was destroyed by the invading barbarians, and the chief record of this period is in the writings of the Venerable Bede (A.D. 731).

Anglo-Saxon period (A.D. 449–1066).

A.D. 449–607. The Jutes settled in Kent, and Saxon kingdoms were formed in Sussex, Wessex, Essex, and Middlesex, while the Angles established themselves in East Anglia, Mercia, and Northumbria. The Britons, especially under King Arthur, offered strenuous resistance to the advance of these heathen invaders, but by A.D. 607 the latter had subdued the country as far west as the Severn and the Mersey.

A.D. 607–800. England became more settled under the "Heptarchy," of which Wessex, Mercia, and Northumbria were the chief kingdoms. The conversion to Christianity of Saxon kings and their people (p. 313) is evidenced by the numerous churches, towers, and crosses of this period, many of which remain.

A.D. 802–827. Egbert, King of the West Saxons, and a friend of Charlemagne, subdued the other English kingdoms and the Welsh.

A.D. 871–899. Alfred the Great founded schools, encouraged trade, established a navy, and started the "English Chronicle."

A.D. 900–978. Edward the Elder utilised the "burhs" or fortified towns against the invading Danes and was the first to describe himself as King of the English.

A.D. 978–1017. The people were impoverished by the raising of "Danegeld."

A.D. 1042–66. Edward the Confessor, who was Norman by association and education, introduced Norman architecture and appointed the Abbot of Jumièges to be Archbishop of Canterbury, and thus Norman influence began before the Conquest.

Norman period (A.D. 1066–1154).

The Norman Conquest linked England to the Continent and introduced the feudal system, and feudal castles were built to strengthen the position of the Normans. Towns, which grew up round abbeys and castles, became trading centres, and through their merchant guilds laid the foundations of local government; but villages continued to be mere collections of wooden huts. Settled government promoted the pursuit of learning which resulted in organised schools or universities, like that of Oxford under

Henry II. French was the language of the Court till the thirteenth century, when, owing to the resentment created by the introduction of strangers by the Angevin kings, English began to supplant it, and the final fusion of the English and Normans took place. The Magna Charta (A.D. 1215) gave freedom to the Church, limited the king's power, and founded English liberty.

Plantagenet period (A.D. 1154–1399).

The framework of government by representatives of nobles, clergy, and commons was evolved, and the Privy Council formed, and in A.D. 1265 burgesses were first summoned to Leicester's Parliament.

A.D. 1265–84. The conquest of Wales led to further development in the planning and design of border castles.

A.D. 1272–1307. Edward I gave up the struggle for his foreign dominions in order to consolidate his position at home. Law was codified and administered by the Courts of King's Bench, Common Pleas, Exchequer, and Chancery; while lawyers and schools of law rose in importance.

A.D. 1337. The export of wool was prohibited and foreign cloth workers were allowed to settle in England. This increased the prosperity of the country, as seen in the development of manor houses.

The Universities of Oxford and Cambridge were more fully organised under different faculties. Matthew Paris, a monk of S. Albans Abbey, wrote a Latin history of England up to A.D. 1258. Froissart (A.D. 1338–1410), the Frenchman at the English Court, chronicled incidents of the "Hundred Years' War"; while Chaucer (A.D. 1340–1400) in his "Canterbury Tales" supplies by far the most valuable materials possessed by any European country elucidating the manners, customs, and modes of life and thought of people during the Middle Ages. The English Bible translated by Wycliffe (A.D. 1320–84), which was largely circulated as the spiritual authority for the laity, also aided in standardising the English language.

A.D. 1362. The English language was used instead of French in parliamentary proceedings and in the law courts.

A.D. 1349–1381. The rise of the farmer class and of the free labourer after the "Black Death" (A.D. 1349), which had swept away one-third of the population, resulted in the Peasants' Revolt (A.D. 1381), and this produced social unrest in country places so that towns increased in importance.

Armour was varied under the Plantagenets by the introduction of solid plates which supplemented chain mail, and the use of knights' arms or devices called into existence the new science of heraldry which was to influence ornament in architecture.

Lancastrian period (A.D. 1399–1485).

Development in national life was continued, and even during the "Wars of the Roses" (A.D. 1455–85) Englishmen cultivated the land and lived the free life described in the contemporary "Paston letters." The demand for wool in the Netherlands encouraged sheep-farming in England, and the consequent prosperity led to the erection of large parish churches in sheep-rearing counties. Increase in home trade, development of foreign commerce, and the change from villeinage to free labour gave importance to the guilds which controlled craftsmanship. All this industrial activity

promoted the building of moot halls, market halls, guildhalls, inns, and bridges, besides houses for successful yeomen and traders. The adoption of printing after its introduction by Caxton in A.D. 1477 gave new facilities for study and an impetus to the building of schools, like Winchester and Eton, and of colleges in the universities.

Tudor period (A.D. 1485–1558).

The accession of Henry VII united the Houses of York and Lancaster and gave a great impulse to the development of political institutions. A notable social feature was the decline of the clergy, as the one great Mediæval profession, and the rise of successful lawyers, medical men, wealthy merchants, and yeomen, who were gradually absorbed into the landed gentry. This was accompanied by the establishment of Justices of the Peace who administered the law from their country houses and in Quarter Sessions. This upward movement, which was aided not only by the suppression of the monasteries and the distribution of their wealth amongst the new classes, but also by the spread of education and facilities for foreign travel, produced a national type of domestic architecture for houses of country squires which now display a new standard of comfort. The old nobility declined in importance, and thus the position of the monarchy was strengthened, especially through the Privy Council, which later, as the " Star Chamber," exercised wide judicial authority; while the House of Commons was strengthened by representatives from new boroughs—changes which indicate a movement towards modern methods of life and government. Henry VIII introduced foreign artists, such as Da Trevigi, who was appointed Court architect; Torrigiano, the sculptor, and Holbein, the painter and designer in wood and metal.

A.D. 1515–30. Cardinal Wolsey, who was also Lord Chancellor, built palaces, founded colleges, and patronised art. The writings of Colet and More reflect that breaking away from Mediæval ideals which coincided with the last yet brilliant phase of English Gothic, known as Tudor architecture.

vi. Historical.

The varying history which influenced English architecture is here traced by salient dates and events which, though they may not be directly connected with architectural changes, help us to keep our touch on the pulse of that living art which is the outcome and expression of national fortunes.

B.C. 55. Julius Cæsar's first expedition into Britain opened the way for that Roman influence which was to exercise such power in moulding English civil, judicial, literary, and artistic life.

A.D. 43. Expedition of the Emperor Claudius into Britain.

A.D. 84. Final conquest of Britain by Agricola, the General of Domitian.

A.D. 420. The Roman troops withdrew from Britain.

A.D. 449–607. The English (Angles, Saxons, and Jutes) conquest of Britain was carried out amidst much internal strife.

A.D. 800–900. The Danish invasions mark a lapse into barbarism, when the country was a prey to constant invasion and ruthless pillage by hordes of heathen Danes, who plundered and destroyed churches and monasteries till defeated by Alfred the Great (A.D. 871–899), who laid the foundation of English unity.

A.D. 978–1042. A second series of Danish invasions resulted in the election in A.D. 1017 of Canute the Dane, as King, and his line lasted till A.D. 1042.

A.D. 1042. The accession of Edward the Confessor, son of the English King Ethelred, paved the way for the introduction of Norman architecture.

A.D. 1066. The Norman Conquest not only brought England into contact with Continental civilisation, but also inaugurated a great new era for England; for whereas the Romans came and went, the Normans came and stayed, and their ultimate fusion with the old inhabitants produced a hardy, enterprising race which was no longer Anglo-Saxon or Norman, but English, and the same process took place in architectural development.

A.D. 1095–1254. The eight Crusades, which brought about intercourse between East and West, involved England in international movements, especially in the reign of Richard Cœur de Lion (A.D. 1189–99), who, during the third Crusade, was absent in the East for five years. The influence of the Crusades is seen in the type and fortification of castles; in the impetus given to learning and to the universities, and in the foundation of the militant religious orders.

A.D. 1338–1453. The war with France, known as the "Hundred Years' War," was signalised by the campaigns of Crecy, Poitiers, Agincourt, and the siege of Orleans, and finally resulted in the loss of the English possessions with the exception of Calais (A.D. 1453). Edward the Black Prince ruled in A.D. 1360 at Bordeaux as Prince of Aquitaine, and Henry VI of England was crowned King of France at Paris in A.D. 1431. The intercourse between the countries, which was inevitable when one king held his court both in London and Paris, could not fail to affect English architecture.

A.D. 1500. By the beginning of the sixteenth century new social conditions had already rendered the old feudal castle obsolete as an institution in national life, even before the general use of gunpowder, and new military methods made it further useless as a defensive fortress. Houses were now built not as castles, but as residences, such as Sutton Place, near Guildford (A.D. 1523–25), which is one of the earliest examples of a non-castellated domestic residence (p. 376).

A.D. 1520. Henry VIII and his courtiers visited the French King Francis I on the "Field of the Cloth of Gold," and on their return to England introduced the Renaissance style, which had recently been imported into France from Italy.

2. ARCHITECTURAL CHARACTER

The character of Romanesque and Gothic architecture in Europe has already been considered (pp. 246, 300). The development of Mediæval architecture in England from the departure of the Romans till the sixteenth century shows a more complete sequence of styles than in other countries. It is usually divided into periods roughly corresponding with the centuries and having their own special characteristics; these are known as Anglo-Saxon, Norman, Early English, Decorated, Perpendicular, and Tudor. The table given below of the nomenclature of the periods is based on the classification made by Rickman to coincide with the reigns of English sovereigns, and that of Sharpe, whose periods are determined by evolution of window tracery. These somewhat arbitrary style-names cannot be

considered scientific, as they are based partly on historical periods and partly on architectural character; but, as they have held the field for so long in all descriptions of English architecture, they have become, as it were, an integral part of architectural phraseology. They refer approximately to the type of architecture prevalent during the centuries with which they are identified, and can best be understood by study at first hand of buildings belonging to the different periods, and of architectural details in the various museums. The periods subsequent to the departure of the Romans in A.D. 420 are classified alternatively as follows:

Dates.	Periods.	Style names.	
A.D. 449–1066	(5th to 11th century)	Anglo-Saxon	
A.D. 1066–1189	(12th century)	Norman	
A.D. 1189–1307	(13th century)	Early English	Lancet
A.D. 1307–1377	(14th century)	Decorated	Geometrical, Curvilinear
A.D. 1377–1485	(15th century)	Perpendicular	Rectilinear
A.D. 1485–1558	(first half of 16th century)	Tudor	

Although each period is thus defined, it must be remembered that the transition from one style to another was slow and gradual and is often difficult to trace. The architectural character of each period is treated separately, and may be read in conjunction with the comparative analysis (p. 400) which demonstrates the gradual evolution through the different periods of plans, walls, openings, roofs, columns, mouldings, and ornament.

Pre-Roman period.—The few traces that have been found of building in England before the Roman occupation indicate that it was so primitive in character as hardly to allow of its classification as architecture. Evidences of its type may be seen in Stonehenge, Avebury, and other cromlechs, dolmens, tumuli, and beehive huts in different parts of the country (p. 3).

Roman period (B.C. 55—A.D. 420).—The architecture of the Romans in England was of the same character as in other parts of Europe, and a considerable amount still remains, not only of massive work, like Hadrian's Wall, but also of buildings in towns, such as Silchester, Bath, Chester, and Corstopitum (Corbridge). Forums, basilicas, baths, temples, and villas have been and still are being uncovered; while in museums throughout England mosaic floors, pottery, and sculptures indicate the care which the Romans bestowed on dwelling-houses as well as on public buildings in this country. The standardised architecture of the Romans, which is dealt with in the chapter on Roman architecture (p. 133), was of such a virile character that it inevitably influenced the subsequent Anglo-Saxon and Romanesque (Norman) architecture.

Anglo-Saxon period (A.D. 449–1066).—It is difficult to arrive at a conclusive estimate of the architectural character of a period when buildings were sometimes composed either of fragments or of rough copies of Roman architectural details (p. 321). Timber was presumably largely employed in domestic building, but, because of its perishable nature, little evidence remains as to the way in which it was introduced. The great development which took place in the use of that material in later times is another instance of the natural tendency in England to turn to timber for house building, as for ship building. Some even assert that the masonry of the early stone churches, which appear to have been first built about A.D. 650, is due to the influence of timber prototypes, as in the "long and short work" (p. 321 c),

the triangular-headed openings (p. 321 J), the pilaster strips (p. 321 C, E, M) and the baluster mullions (p. 321 B, G, H, P) ; but these features may equally well be derived from the Romanesque architecture of Italy. The few vaults of this period that have come down to us were founded on Roman, as the simple cross-vaults of a few church crypts. For Anglo-Saxon vaulting see p. 327. Churches of this period include those at Worth (pp. 321 L, 396 C), Barnack, Brixworth, Earls Barton (p. 321 C), Boarhunt (p. 321 K, N), Sompting (p. 321 E), Wickham, Deerhurst (A.D. 1056) (p. 321 J), Greensted, and in Dover Castle, while S. Lawrence, Bradford-on-Avon (C. A.D. 700) (p. 321 M, Q), and the church at Escomb, Durham (p. 396 B), are two beautiful examples on a small scale. To this period also belongs S. Martin, Canterbury (C. A.D. seventh century) and the crypt of Ripon Cathedral.

Norman period (A.D. 1066–1189).—The English Romanesque or Norman style comprises the reigns of William I (A.D. 1066–87), William II (A.D. 1087–1100), Henry I (A.D. 1100–35), Stephen (A.D. 1135–54), and Henry II (A.D. 1154–89). Norman architecture is bold and massive, and the distinguishing features are semicircular arches, ponderous cylindrical piers, and flat buttresses, similar to the architecture of Normandy, whence it was first introduced by Edward the Confessor, and it was subsequently established by William the Conqueror. Sir Walter Scott well describes the character :

> " That abbey frown'd
> With massive arches broad and round,
> That rose alternate row on row
> On ponderous columns short and low ;
> Built ere the art was known,
> By pointed aisle and shafted stalk
> The arcades of an alley'd walk
> To emulate in stone "

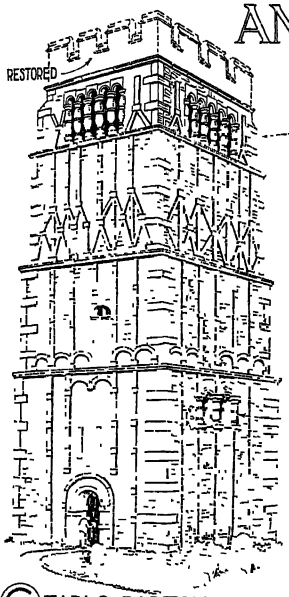
In Norman vaulting a new system was introduced in which groins or meeting surfaces of cross-vaults were replaced by specially constructed semicircular ribs thrown across the sides and diagonals of vaulting compartments, and these ribs support thin panels of stone. This novel system gave a new character to Norman architecture and eventually led, by the gradual introduction of additional ribs, to the complicated and characteristic " rib and panel " vaults of the Gothic period. For Norman vaulting see p. 327.

In London the principal Norman buildings are the Keep and Chapel of the Tower of London (p. 367) ; the Rotunda of the Temple Church (see below) (p. 322) (Transitional) ; S. Bartholomew the Great, Smithfield (p. 323 A) ; and the crypt of S. Mary-le-Bow, Cheapside (p. 725).

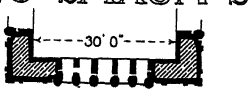
In the Provinces the principal examples are found in the Cathedrals of Norwich (p. 343), Durham (p. 343), Oxford (p. 343), Gloucester (p. 343), Exeter (p. 343), Ely (p. 343), Hereford (p. 343), Peterborough (pp. 341, 343), Winchester (p. 344), S. Albans (p. 344), and Chichester (p. 340), and in Waltham and Tewkesbury Abbeys, while Barfreston Church, Kent, and Iffley Church, Oxford, are among the smaller churches. There are also circular churches (p. 245) at Cambridge, Northampton, Little Maplestead, and Ludlow (ruined), making with the Temple Church, London, a total of five in England, and a large number of feudal castles also date from this period (p. 362), as well as some manor houses (p. 368).

Early English period (A.D. 1189–1307).—The thirteenth-century style also known as Lancet, First Pointed or Early Plantagenet, comprises the reigns of Richard I (A.D. 1189–99), John (A.D. 1199–1216), Henry III (A.D. 1216–72),

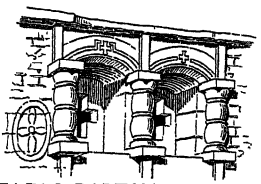
ANGLO-SAXON STYLE



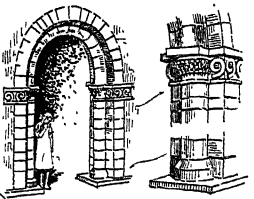
C EARLS BARTON. TOWER



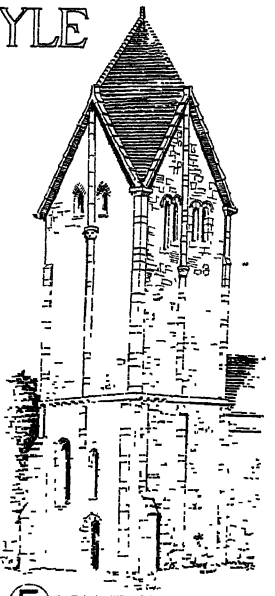
A PLAN AT BELFRY STAGE



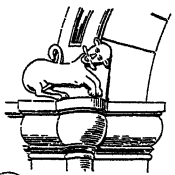
B EARLS BARTON: TOWER WINDOW



D SOMPTING: TOWER ARCH



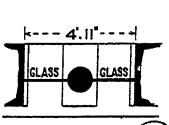
E SOMPTING: TOWER



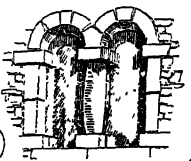
F S. BENET: CAMBRIDGE: IMPOST



G S. MARY THE YOUNGER: YORK: TOWER WINDOW



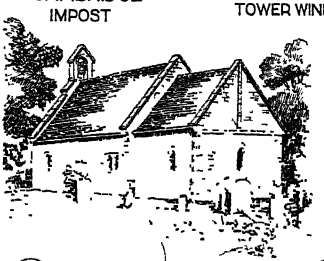
PLAN



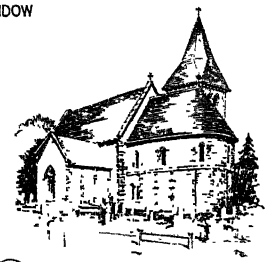
H WINDOW: WORTH CH. SUSSEX



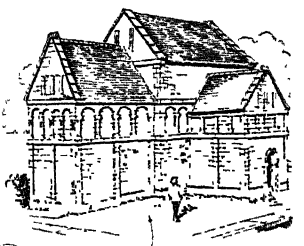
J DEERHURST: GLO'STERSHIRE: TOWER WINDOW



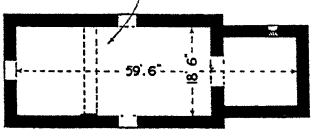
K BOARHUNT CH. HANTS



L WORTH CHURCH SUSSEX



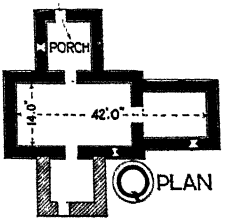
M BRADFORD-ON-AVON CH: WILTS



N PLAN



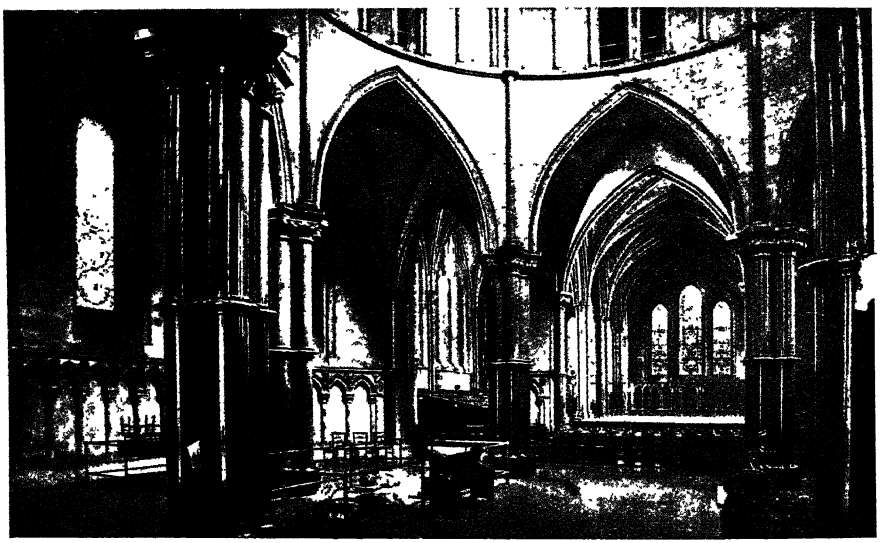
P S. BENET : CAMBRGE. TOWER



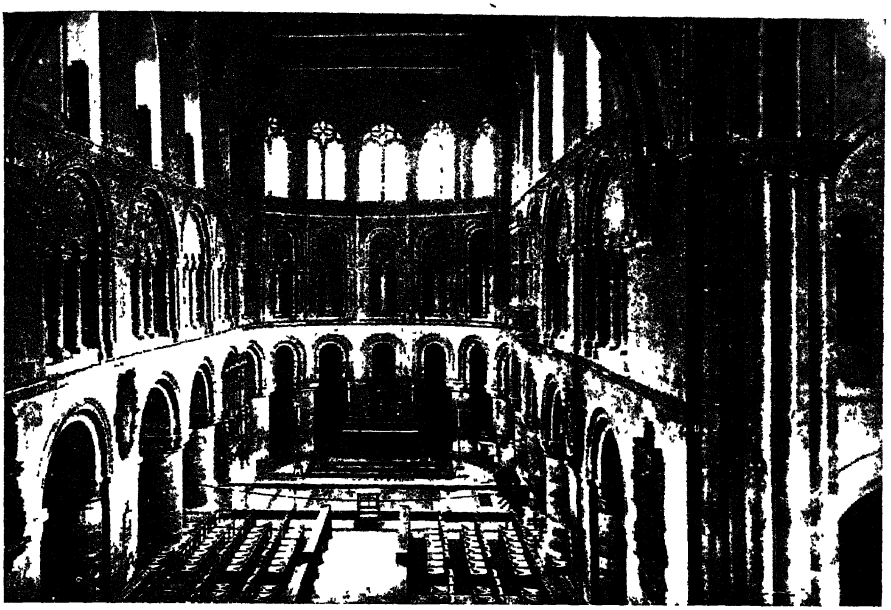
Q PLAN



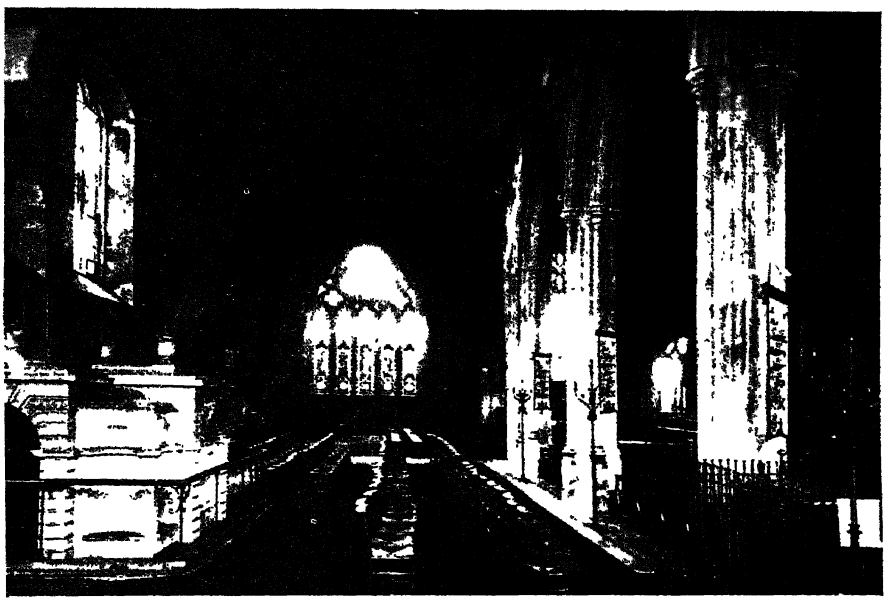
A. Temple Church, London, from S.



B. Temple Church, London: Interior looking E.



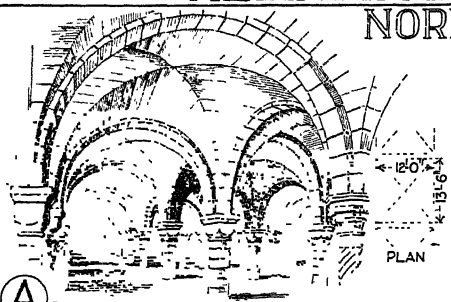
A. S. Bartholomew, Smithfield, London

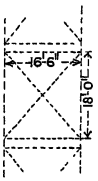


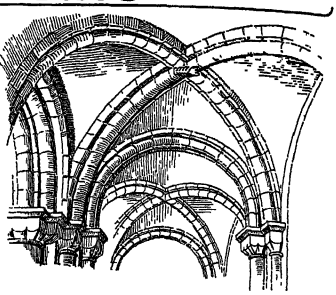
B. S. Helen, Bishopsgate, London

MEDIÆVAL VAULTING

NORMAN







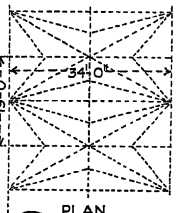
A GROINED VAULT: CANTERBURY CRYPT

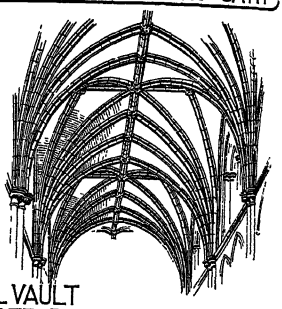
B RIBBED VAULT: PETERBORO' CATH[L]

EARLY ENGLISH





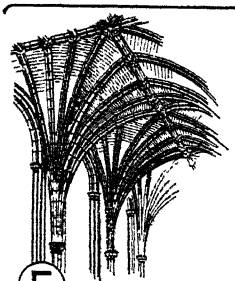


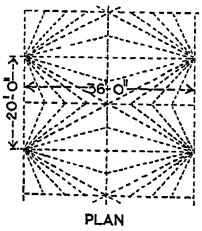


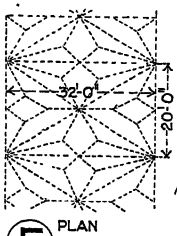
C RIB & PANEL VAULT SALISBURY CATH[L]

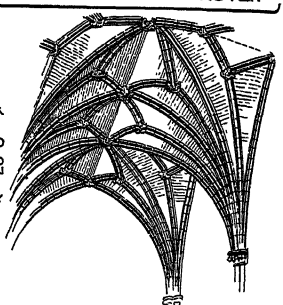
D RIB & PANEL VAULT WITH INTERMEDIATE RIBS: WESTMINSTER

DECORATED





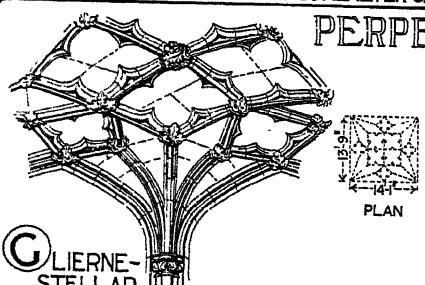


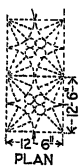


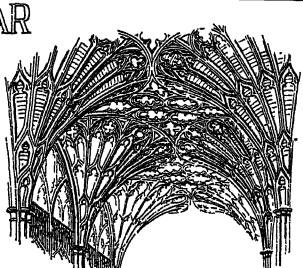
E RIB & PANEL VAULT: WITH ADDITIONAL INTERMEDIATE RIBS. EXETER CATH[L]

F LIERNE VAULT: BRISTOL CATHEDRAL

PERPENDICULAR







G LIERNE-STELLAR VAULT: S. MARY REDCLIFFE. BRISTOL

H FAN VAULT CLOISTERS. GLOUCESTER CATHEDRAL

and Edward I (A.D. 1272–1307). This style, less massive than the Norman, depends for effect on pleasing proportions, well defined outlines, and simplicity in ornament. Tall and narrow lancet openings give height to the design, and exteriors are marked by projecting buttresses, pinnacles, and steep-pitched roofs. Internally, groups of slender shafts, connected to the piers by bands, replace the massive Norman pillars. Lines of dog-tooth ornament in the deeply channelled arch-mouldings, foliated capitals and bosses, and knots of pierced and hanging leaves, almost impart life to the stone framework of door and window openings. The rib and panel vaults of pointed form with transverse and diagonal ribs, which are both bold and graceful, now generally spanned the wide naves of churches and cathedrals, as at Westminster and Lincoln (p. 348 B). For Early English vaulting see p. 328.

In London the principal examples are the eastern portion of the Temple Church, which, with its nave and aisles of equal height, is an English "hall" church (p. 322); the eastern arm, transepts, five bays of the nave, chapter house and part of the cloisters of Westminster Abbey (A.D. 1245–69) (p. 344); the chapel of Lambeth Palace, and the choir, Lady chapel, and nave (restored) of Southwark Cathedral.

In the Provinces the principal examples are Salisbury Cathedral (p. 344), York (transepts) (p. 344), Lincoln (nave and chapter house) (p. 343), Rochester (choir and transepts) (p. 344), Wells (nave and west front) (p. 344), Lichfield (p. 343), Ely (choir, transepts, and "Galilee Porch") (A.D. 1198–1218) (p. 343), Worcester (choir) (p. 344), Bristol (Elder Lady Chapel) (p. 340), besides castles (p. 367), manor houses (p. 373), and other secular buildings (pp. 385, 391, 392, 397, 398, 399).

Decorated period (A.D. 1307–77).—The fourteenth-century style, also known as Geometrical and Curvilinear, Middle Pointed, Edwardian, or Later Plantagenet, comprises the reigns of Edward II (A.D. 1307–27) and Edward III (A.D. 1327–77). This style is much richer in ornament than the Early English and is made all the more magnificent by the geometrical and flowing tracery, sometimes crowned with the ogee arch, which frames the glowing coloured-glass windows. Clear-stories were enlarged at the expense of the triforium. Vaulting ribs became so numerous and complex by the addition of intermediate and lierne ribs that the vault with multitudinous ribs, often forming star-shaped patterns or stellar vaulting, was a main feature in the decoration of church interiors, as in the choir at Ely. For Decorated vaulting see p. 328.

In London the principal examples are Westminster Abbey (three bays of the east cloister), the Chapel of S. Etheldreda, Holborn, and the Dutch Church, Austin Friars.

In the Provinces the principal examples are the cathedrals of Lincoln (nave and east end, including "Angel Choir") (A.D. 1260–80) (p. 343), Ely (eastern portion) (p. 343), York (choir, west front, and chapter house) (p. 344), Exeter (p. 343) and Lichfield (naves) (p. 343), S. Albans (choir) (p. 344); polygonal chapter houses at Salisbury (p. 344), Wells (p. 344), and Southwell (p. 344); Stone Church, Kent, the Eleanor Crosses (pp. 394 B, 425), besides castles (p. 367), manor houses (p. 373), and other secular buildings (pp. 385, 397–9).

Perpendicular period (A.D. 1377–1485).—The fifteenth-century style, also known as Rectilinear, Late Pointed, or Lancastrian, comprises the reigns of Richard II (A.D. 1377–99), Henry IV (A.D. 1399–1413), Henry V (A.D. 1413–22), Henry VI (A.D. 1422–61), Edward IV (A.D. 1461–83), Edward V (A.D. 1483), and Richard III (A.D. 1483–85). The general appearance is indicated

by its name, which is derived from the upright lines of the window tracery and of the panelling which covered both internal and external walls, and extended even over buttresses. Windows, now often crowned with four-centred arches, were, owing to their immense size, strengthened by horizontal transoms, by primary and secondary mullions (p. 408 M), and sometimes by an inner gallery across the window, as at York. The triforium practically disappeared, owing to the greater height of nave arcades and the flatness of aisle roofs, while clear-story and aisle windows were increased in height. Fan vaults too are characteristic, with their numerous ribs and panels, as in the cloisters of Gloucester Cathedral (A.D. 1377) and the complicated " fan and pendant " vaults, as at Oxford Cathedral. This peculiarly English feature is seen in its loveliest form in the Chapel of Henry VII, Westminster, which properly belongs to the Tudor period. For Perpendicular vaulting see p. 337.

In London the principal examples are the south and west cloisters of Westminster Abbey (p. 344); S. Margaret, Westminster; the arcade of S. Helen, Bishopsgate (p. 323 B); porch of S. Sepulchre, Holborn; Savoy Chapel, Strand; Westminster Hall (pp. 362, 417); Crosby Hall (now removed to Chelsea), and the Guildhall Porch.

In the Provinces the principal examples are the west fronts of Winchester (p. 344), Gloucester (p. 343), and Beverley; S. George's Chapel, Windsor (pp. 382, 386); Sherborne Minster; King's College Chapel, Cambridge (pp. 383, 386); the cathedrals of Canterbury (nave) (p. 340), York (choir) (p. 344), Gloucester (transept, choir, and cloisters) (p. 343), and Winchester (nave) (pp. 344, 352, 403 M); the Beauchamp Chapel, Warwick (p. 386); towers at Gloucester (p. 343) and Canterbury (pp. 340, 346 A); many colleges at Oxford and Cambridge (pp. 384, 391), besides castles (p. 367), manor houses (p. 374), and other secular buildings (pp. 385, 392, 397–9).

Tudor period (A.D. 1485–1558).—The first half of the sixteenth century comprises the reigns of Henry VII (A.D. 1485–1509), Henry VIII (A.D. 1509–47), Edward VI (A.D. 1547–53) and Mary (A.D. 1553–58). The character of the style, which, in ecclesiastical architecture, was similar to Perpendicular in general treatment, was modified because it was now called into use for domestic rather than for ecclesiastical buildings. The revived Roman style, which originated in Italy in the fifteenth century, was gradually spreading through France to England, where, grafted on the late Gothic or Perpendicular, it produced a picturesque combination, as the product of craftsmen trained in Gothic traditions, but working under architects imbued with the Renaissance spirit and familiar with Classical details. Notable features in domestic buildings of this period were square-headed mullioned windows, reminiscent of the Perpendicular style; ornamental fireplaces with wide four-centred arch and lavish heraldic carving (p. 378 A) sometimes provided with iron fire-backs (p. 378 L); gables with lofty carved pinnacles which group up with high moulded chimneys (p. 378 F) and carved finials (p. 378 D), as seen in countless manor houses throughout the country. For Tudor vaulting see p. 337.

In London the principal examples are the beautiful Chapel of Henry VII, Westminster (p. 350), the gateway of S. James' Palace, and portions of some city churches.

In the Provinces the principal examples are Compton Wynyates, Warwickshire (pp. 376, 380), Layer Marney (c. A.D. 1500–25) (p. 312), Sutton Place, Guildford (A.D. 1523–25) (pp. 376, 385), parts of Hampton Court Palace (pp. 377 A, G, 380), the famous vaulted stairway, Christchurch, Oxford

(A.D. 1630), besides many country mansions (p. 379) and other secular buildings (pp. 385, 392, 397–9).

Tudor was followed by Elizabethan and Jacobean architecture (p. 701) in which may be traced increased Roman influence, until this Early Renaissance architecture developed into the Stuart period of the Late Renaissance. The process, however, was slow, and native Gothic survived in outlying districts till the end of the sixteenth century and even later, as in the extraordinary church of S. Mary, Warwick, rebuilt as a "hall" church (A.D. 1694) in the Perpendicular style with a mingling of Renaissance features.

THE EVOLUTION OF ENGLISH GOTHIC VAULTING

The various problems which, by their solution, determined the evolution of Mediæval vaulting exercised such an important influence on the general character of the architecture that it is desirable to give a consecutive description of vaulting evolution through the successive centuries in order to secure an uninterrupted view of such an integral part of Mediæval architectural design. In the chapters on Romanesque and Gothic architecture in Europe (pp. 247, 306) we have dealt generally with the various aspects of these problems, and we here follow the evolution as it took place in England. The problem for the Mediæval architect was to construct a stone vault over the lofty nave of a church of the basilican type, while leaving clear-story windows in the nave walls above the aisle roofs. While Roman vaulting consisted in the design either of semicircular vaults or of semicircular cross-vaults, of which the meeting lines or intersections are known as groins, Mediæval vaulting was of quite a different type; for the simple groins were now replaced by specially constructed ribs on which the thin vaulting panels were placed. This was an economical form of building; for it dispensed with the large amount of "centering" required for the temporary support of the heavy Roman vaults, as each rib, when constructed, itself became the support of the vault panel. The weight of the stone vault, high above the ground, exerted considerable thrust and so involved the solution of structural problems and resulted in the employment of novel features, such as buttresses and pinnacles, to counteract the thrust of this nave vault, while the numerous ribs meeting on the pier capitals had to be supported, and so required novel types of piers, thus determining, in a remarkable degree, the character of English Mediæval architecture.

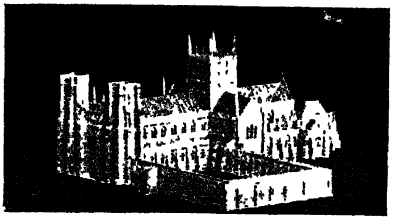
Anglo-Saxon Vaulting.—The vaulting that was carried out during this period was based on Roman, like that in the porch at Monkwearmouth, which, according to Baldwin Brown, is the only Saxon vault remaining above ground in England; while the vaulting in the Chapel of the Pyx, Westminster Abbey, though dating from the time of Edward the Confessor, is of Norman character.

Norman Vaulting (p. 324 A, B).—The Roman system of vaulting was in vogue till the introduction of transverse and diagonal ribs. Norman vaulting, originally similar to Roman, was either (*a*) cylindrical or barrel vaulting, as in S. John's Chapel, Tower of London (p. 364 C); (*b*) groined cross-vaulting in square bays, as in the aisle of S. John's Chapel, Tower of London, and the crypt of Canterbury Cathedral (A.D. 1096–1107) (p. 324 A), and it is interesting to note that the earliest cross-vaults are found over low crypts of churches where they were easier to construct, and had only to support the floor of the church; (*c*) oblong bays in which the vaulting ribs or arches

across the shorter span were either stilted (p. 302 C, G) or in the later period slightly pointed; (*d*) sexpartite (six-part) vaulting (p. 302 E), as in the choir at Canterbury Cathedral (p. 346 B), rebuilt by William of Sens (A.D. 1195), which has the same type of vaulting as at the Abbaye-aux-Hommes, Caen (p. 276). In England the system, so frequent on the Continent, of raising the diagonal rib to produce the domical vault seems to have been little used, and the method was either to make diagonal ribs segmental, as in the aisles at Peterborough Cathedral (p. 324 B), or to make the diagonal ribs semicircular and stilt or raise the springing of the transverse and longitudinal ribs. A great advance was made by the pointed arch, which was first used for the transverse and wall ribs only, the diagonal ribs (i.e. those with the longest span) remaining semicircular. The vault over the nave of Durham Cathedral (A.D. 1128–33) has pointed transverse ribs which are believed to be the earliest examples of a pointed arch to a high vault in England (p. 336 B).

Early English Vaulting (p. 324 C, D).—The pointed arch came into general use in the thirteenth century, and, without the aid of stilting or other contrivances, surmounted the difficulties created by the intersection of semicircular vaults of different spans (p. 302). The plain four-part (quadripartite) ribbed vault, primarily constructed as a skeleton framework of diagonal and transverse ribs, was chiefly used in this period, as in the naves of Durham, Salisbury (p. 345 H) and Gloucester, and the aisles of Peterborough. Intermediate ribs, known as "tiercerons," were inserted later between the transverse and diagonal ribs to give additional support to the panels, as in the nave of Westminster Abbey (p. 324 D). Ridge ribs were then introduced to resist the thrust of the opposing "tiercerons" and keep them in position. In Continental examples the ridge rib is often not continuous and is only used for those ribs which abut obliquely at the summit. Ridge ribs are generally horizontal in England, but on the Continent are arched between the bosses. The courses of the vault panels meet at the ridge in zigzag lines, as in the nave of Westminster Abbey (pp. 303 F, 357 B), Lincoln, Exeter, and Lichfield Cathedrals, as well as in the churches of south-west France. Wall ribs or "formerets" enclosing the lateral wall space of the vaulting compartment came into use during this period. The "ploughshare twist," which sometimes occurs in the panels between diagonal and wall ribs, as in Westminster Abbey and Southwark Cathedral (p. 303 C), is produced by raising the springing of the wall rib above that of the diagonal rib in order to increase the size of clear-story windows.

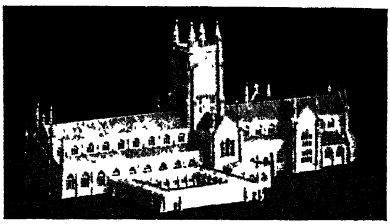
Decorated Vaulting (p. 324 E, F).—A general elaboration of vaulting is characteristic of this period, and is due not only to the greater use of intermediate and ridge ribs, as in the nave vault of Exeter Cathedral, but also to the addition of "lierne" ribs (French, *lien* = tie or bond)—a term applied to any rib other than a ridge rib which does not start from the springing of the vaulting compartment. Previously each rib marked a change in the direction of the vaulting surface, but "lierne" ribs merely follow the curved surface of the panel and, by their number and disposition, often give an intricate appearance to an otherwise simple vault (p. 324 F). The star-shaped pattern thus produced is called "stellar" vaulting (p. 324 G) and there are examples of this type in Gloucester (A.D. 1337–77), Canterbury (A.D. 1379), Wells, Ely (choir) (p. 403 K), Bristol and Winchester Cathedrals (p. 352 H), and Tewkesbury Abbey. Vaulting during this period comprised transverse, diagonal, tierceron, ridge, and lierne ribs, and this increased number of ribs so decreased the size of the panels they supported that the space from rib to



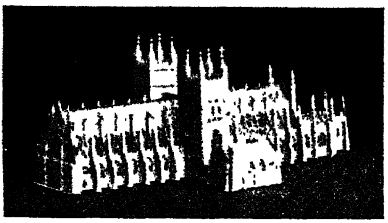
A. WELLS



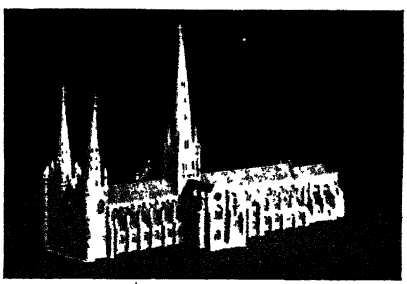
B. RIPON



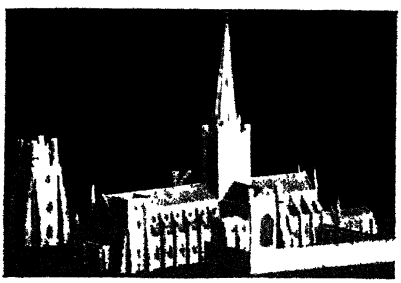
C. WORCESTER



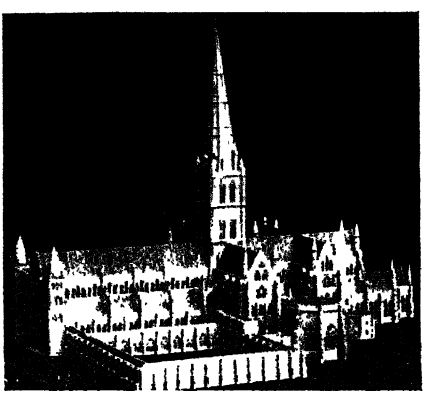
D. EXETER



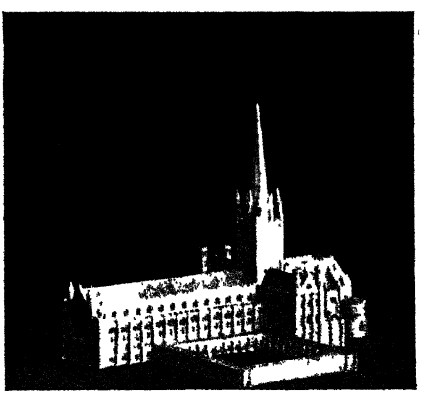
E. LICHFIELD



F. CHICHESTER

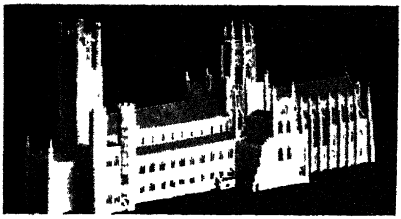


G. SALISBURY

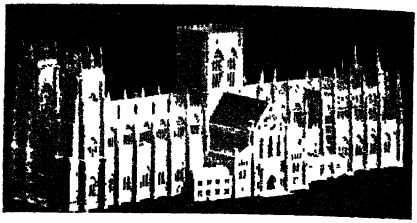


H. NORWICH

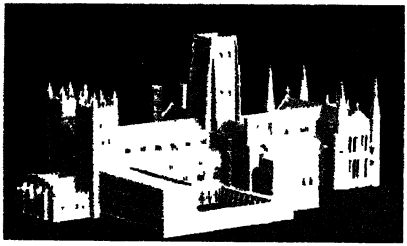
COMPARATIVE MODELS OF ENGLISH CATHEDRALS



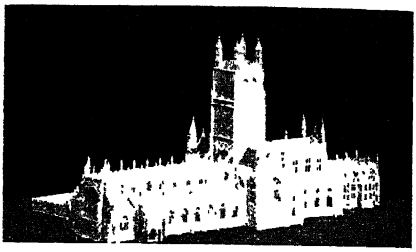
A. ELY



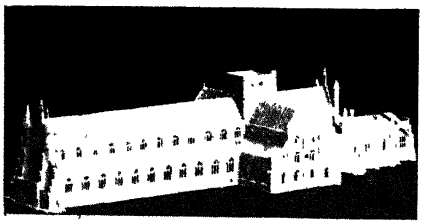
B. YORK



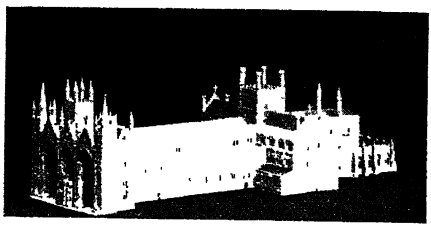
C. DURHAM



D. GLOUCESTER



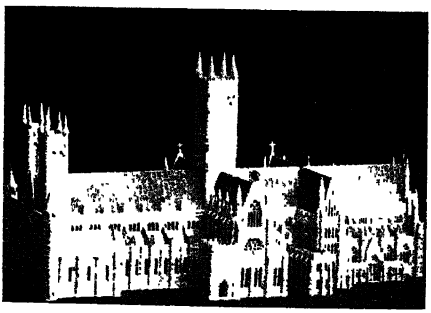
E. WINCHESTER



F. PETERBOROUGH

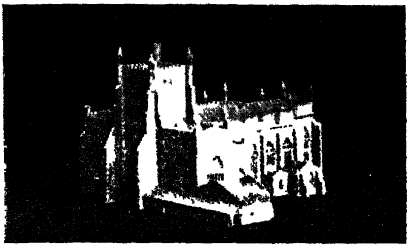


G. CANTERBURY

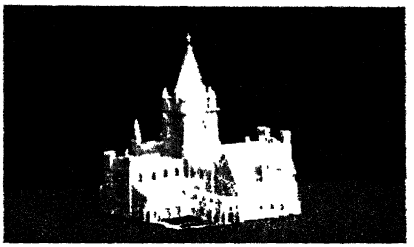


H. LINCOLN

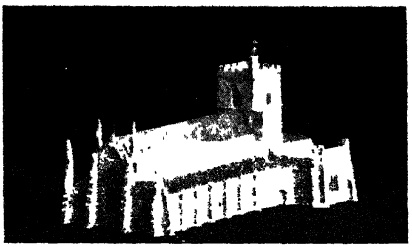
COMPARATIVE MODELS OF ENGLISH CATHEDRALS



A. Bristol



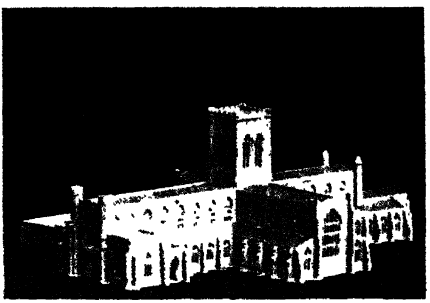
B. Oxford



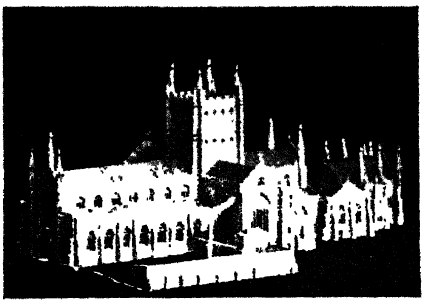
C. Carlisle



D. Rochester



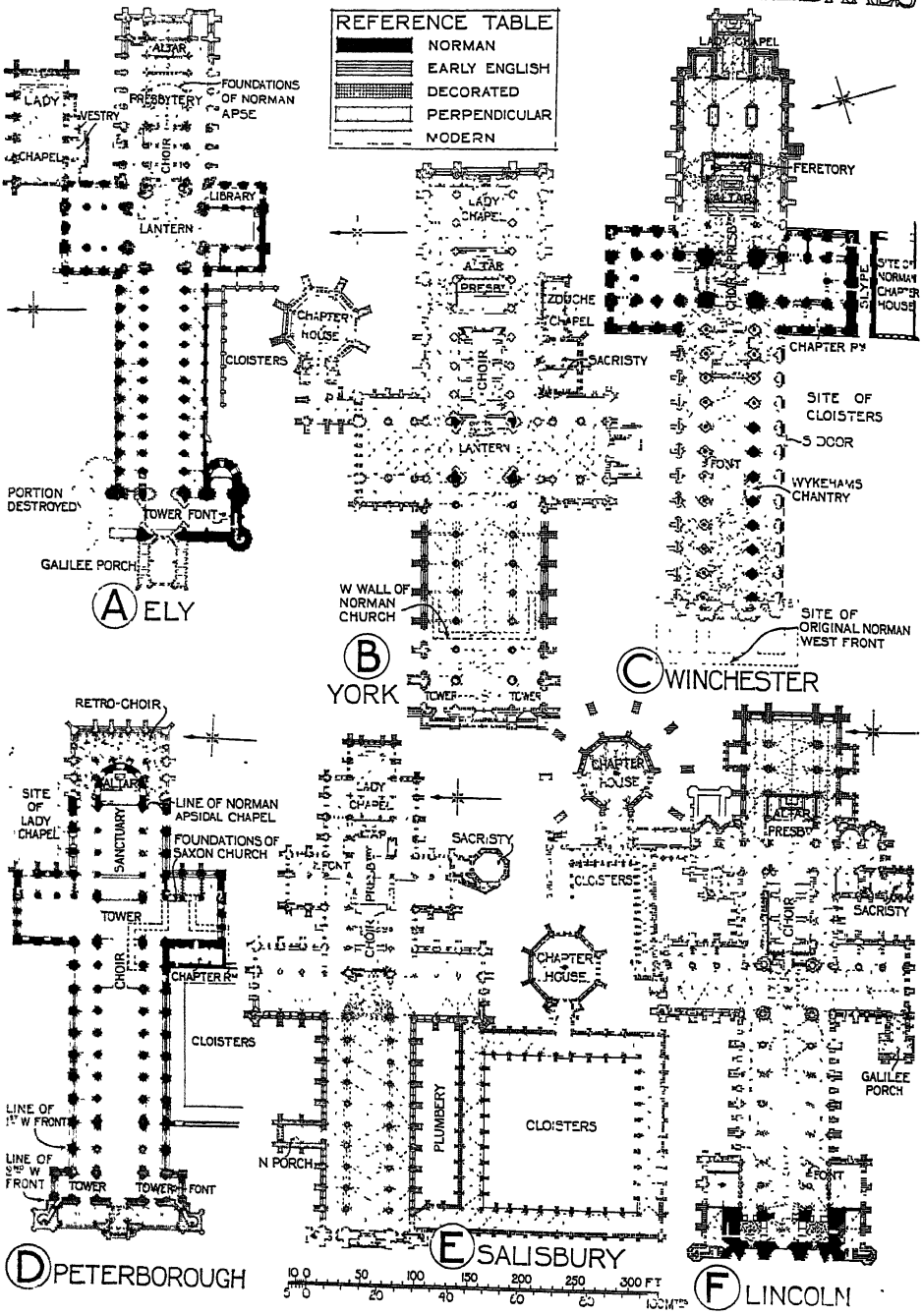
E. Chester



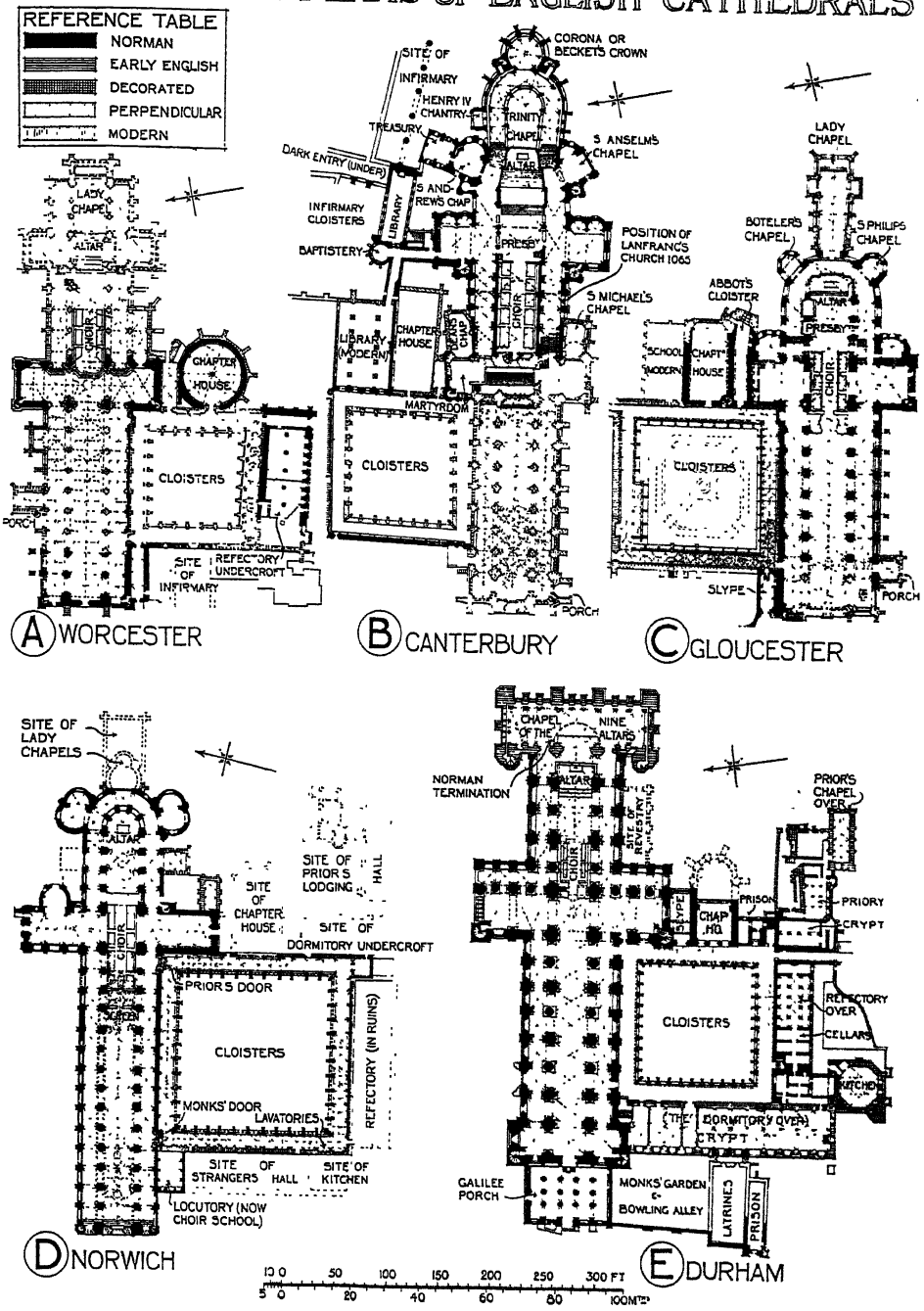
F. Hereford

Comparative Models of English Cathedrals

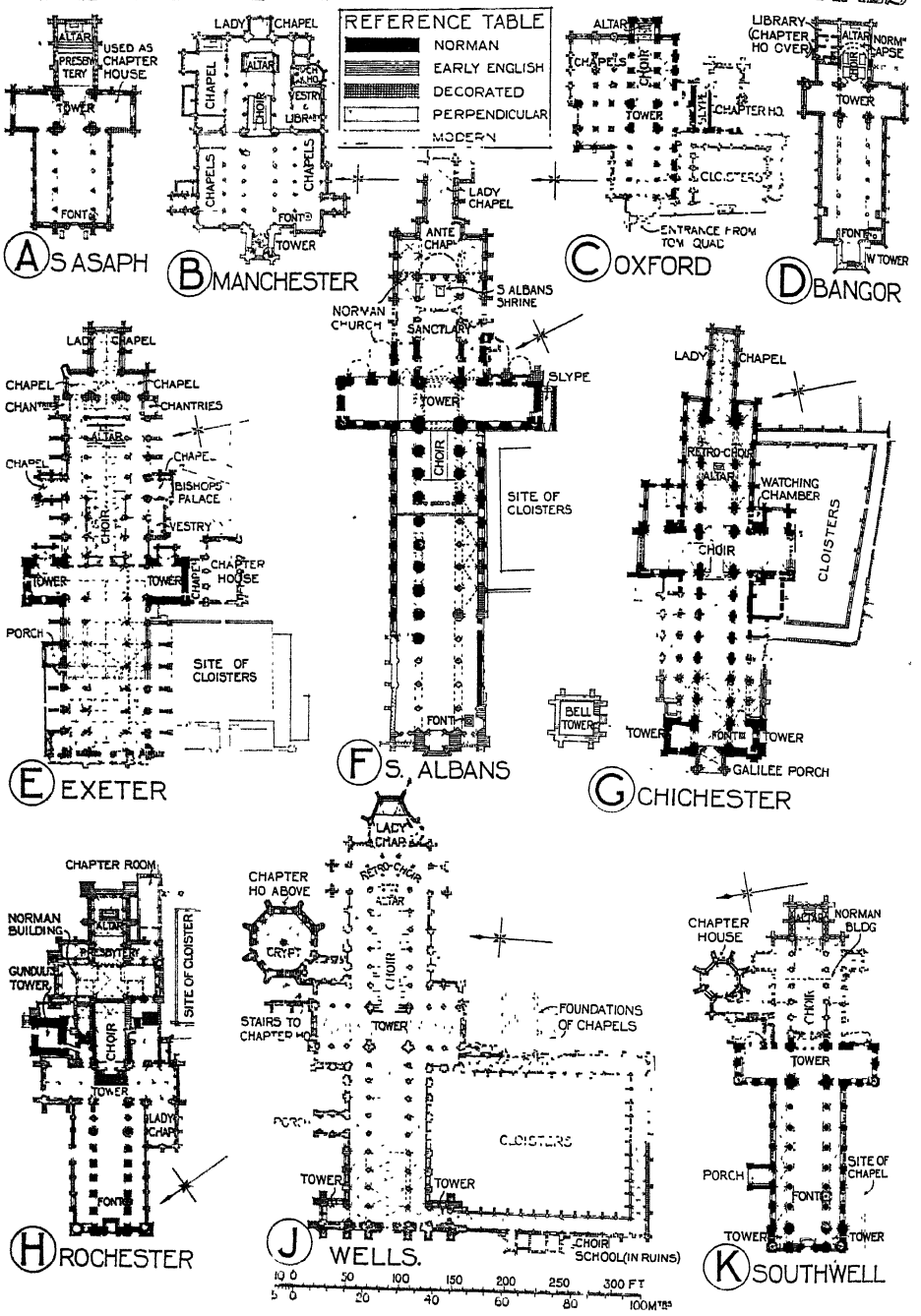
COMPARATIVE PLANS OF ENGLISH CATHEDRALS



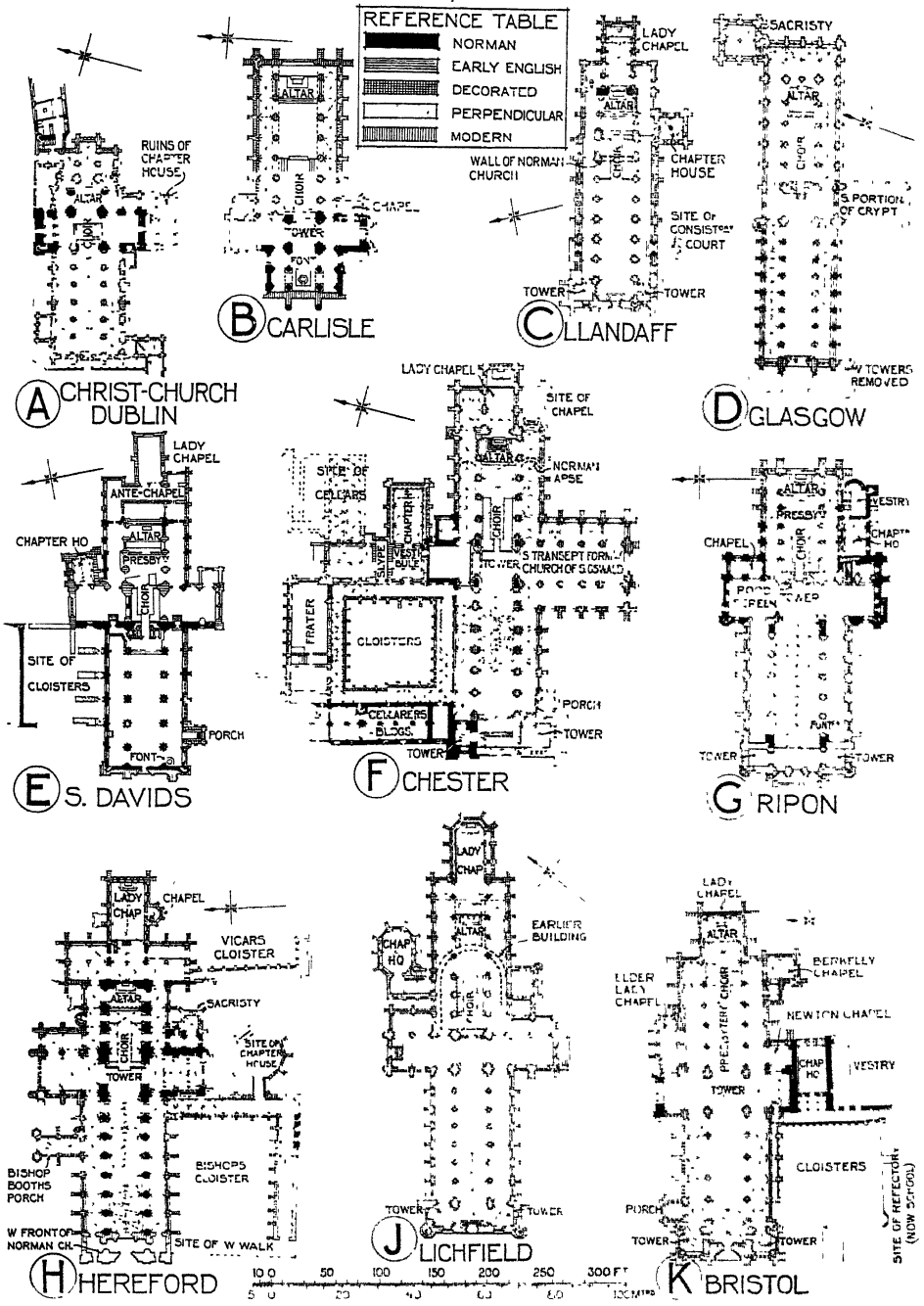
COMPARATIVE PLANS OF ENGLISH CATHEDRALS

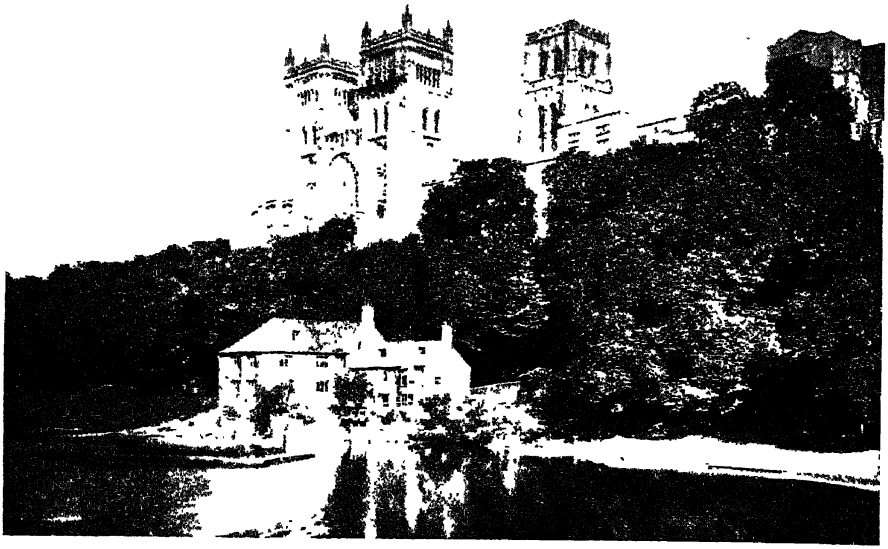


COMPARATIVE PLANS OF ENGLISH CATHEDRALS



COMPARATIVE PLANS OF ENGLISH CATHEDRALS





A. Durham Cathedral from the Wear



B. Durham Cathedral: Nave looking East

rib was frequently spanned by a single stone. Carved bosses (French, *bosse* = lump or knob) or keystones, which had already come into use in the thirteenth century, had their origin in a constructive use as keystones against which the ribs abutted and also in the need for disguising the awkward mitres made by the meeting of moulded ribs. In the fourteenth century the increase in the number of ribs led to a corresponding increase in the number of bosses which, as part of the general scheme, gave to these Gothic vaults an extremely ornamental and web-like appearance.

Perpendicular Vaulting (p. 324 G, H).—The intricate "stellar" vaulting of the late fourteenth and early fifteenth centuries led, by experimental stages, to the type known as fan, palm, or conoidal vaulting, first used in the cloisters at Gloucester (A.D. 1351–77), in which the rising ribs are formed at equal angles on the surface of inverted concave cones and are thus of the same curve, and these are connected at different heights by horizontal lierne ribs. The development was somewhat as follows: In the thirteenth century the vault followed the outline of inverted, four-sided concave pyramids; in the fourteenth century the introduction of more ribs resulted in polygonal pyramids with ribs of different curves, while in the fifteenth century the design was simplified by the introduction of "fan" vaulting in which all ribs are of similar curve (p. 324 H). The reduction of the size of panels, consequent on the increase in the number of ribs, brought about a return to the Roman method of construction; for in fan vaulting the ribs and panels were often formed in the same piece of stone instead of the panels resting as separate stones on the ribs, and thus the ribs lost their structural use. This method seems to have been first adopted in vaults where ribs were most numerous, and in some vaults in this and the Tudor period both systems are found, as at King's College Chapel, Cambridge; while in others, as in Henry the Seventh's Chapel, Westminster, the whole vault has ribs and panels formed out of the same piece of stone. The difficulty of supporting the flat, lozenge-shaped space in the crown of the vault was comparatively easy in cloisters, where the vaulting compartments were approximately square, but difficulties arose in adapting fan vaulting to the bays of naves which generally measured twice as much transversely as longitudinally. In King's College Chapel the conoid was continued to the centre and has the sides cut off, forming awkward transverse junctions. The nave of Henry the Seventh's Chapel (A.D. 1502–12) has hidden transverse arches which penetrate above the vaulting and, at a distance from the walls, support pendants or elongated voussoirs, from which spring the conoids, thus reducing the central vaulting space from an oblong to a square (p. 358). At Oxford Cathedral, by a somewhat similar method, the pendants, supported by an upper arch, are placed at some distance from the walls, and from them spring the rib and panel vault (A.D. 1478). Fan vaulting is confined to England, and there are examples at Sherborne Abbey (A.D. 1475); the Divinity Schools, Oxford (A.D. 1445–80); Trinity Church, Ely; Gloucester Cathedral (p. 324 H); S. George's Chapel, Windsor (A.D. 1473–1537) (p. 382 H), and the retro-choir, Peterborough, and the tradition was maintained in the vault over the staircase at Christchurch, Oxford (A.D. 1630). Pendant vaulting without the fan treatment is frequent in the Flamboyant period in France (p. 463), as at Caudebec, Normandy (p. 462 D).

Tudor Vaulting.—The Tudor or four-centred arch (p. 859), so typical of the period, seems to have had its origin in the difficulty of making the various ribs in the oblong vaulting compartments of naves reach the same height. In an oblong Mediæval vaulting compartment which had a lancet-

shaped window in the nave wall, the diagonal ribs are either semicircular or pointed, i.e. struck from two centres in which each side of the arch must be less than the quadrant of a circle ; and because the transverse and wall ribs are shorter than the diagonal ribs, they are still smaller segments of a circle. In oblong vaulting compartments of late Gothic vaults, which often had windows in the nave wall crowned with pointed arches of equilateral or, in early Tudor times, even of the " drop " arch form (p. 859), the diagonal and transverse ribs had to be struck from four centres in order to accommodate their height to that of the window arch. These of necessity were low four-centred arches which started with the same curve as the window arch, but after a certain height the remainder of each rib was struck from another centre in order to bring the apex of all ribs to the same height as that of the window arch. The four-centred arches which were used in late Gothic vaults and conspicuously in fan vaulting were afterwards introduced over doors (p. 377 A), windows (p. 366 K, M), fireplaces (p. 366 G, J), and wall tombs, as well as in traceried panels, possibly with a desire to harmonise with the vaulted superstructure.

The special forms of vault used in chapter houses are referred to later (p. 340).

3. EXAMPLES

The different types of buildings erected during the Middle Ages have been given in the chapter on Gothic architecture in Europe (pp. 307–309). In England all classes of buildings, whether ecclesiastical, such as cathedrals, churches, and monasteries, or secular, as castles, houses, and market-crosses, are generally classified according to their period, as Anglo-Saxon, Norman, Early English, Decorated, Perpendicular, or Tudor, of which the approximate dates have been given (p. 319).

CATHEDRALS

The important place which the Mediæval cathedral occupied in national life has already been indicated (p. 307). English cathedrals, with the single exception of Salisbury, were constantly in process of construction and alteration, and this characteristic invests them with a special fascination, both architectural and historical, for by combining successive stages in architectural style in a single building they one and all reflect national history and development during successive centuries and also form in themselves a complete record of the evolution of Gothic architecture. The special constitution and foundation of many English cathedrals made them monastic in character and were largely responsible for their general arrangement (pp. 332, 333, 334, 335), from which we can judge of their original purpose.

The cathedrals may be divided into (*a*) Cathedrals of the Old Foundation, (*b*) Cathedrals of the Monastic Foundation, and (*c*) Cathedrals of the New Foundation.

(*a*) The thirteen Cathedrals of the Old Foundation which were served by secular clergy were not affected by the reforms of Henry VIII. They are the Cathedrals of York, Lichfield, Wells, Exeter, Salisbury, Chichester, Lincoln, Hereford, London, and the Welsh Cathedrals of Llandaff, Bangor, S. David, and S. Asaph.

(*b*) The thirteen Cathedrals of the Monastic Foundation were originally served by regular clergy or monks, and were reconstituted at the Dissolution of the Monasteries as chapters of secular canons. They are the Cathedrals of Canterbury, Durham, Rochester, Winchester, Worcester, Norwich, Ely,

Carlisle, Peterborough, Gloucester, Chester, Oxford, and Bristol. Westminster Abbey was a cathedral church only from A.D. 1540 to 1545. When the change in these monastic establishments was made, the abbot became the bishop, the prior the dean, and the monks became canons and choristers, while the personnel generally remained the same.

(*c*) The Cathedrals of the New Foundation are those to which bishops have been more recently appointed, viz. Ripon and Southwell, which are old Collegiate Churches, as well as the Parochial Churches of Newcastle, Wakefield, Manchester, Birmingham, Truro, Chelmsford, and Southwark, and the former Abbey Church of S. Alban.

Before describing individual examples of cathedral churches it will be helpful to take a general survey of the features they have in common in this country and in which they offer a striking contrast to Continental and especially French cathedrals. Monastic cathedrals are indeed almost peculiar to England and Germany, where a large proportion of the present cathedral churches once formed part of monastic establishments with cloisters, refectories, dormitories, chapter houses, scriptorium, library, guest hall, infirmary, prison, wine cellar, mills, workshops, and gardens (cf. Monastery of S. Gall, p. 293). The cloisters round which the various buildings were grouped formed a covered way for the use of monks, but were also planned, as at Salisbury and Wells, as ornamental adjuncts to cathedrals which were not part of monastic establishments. The Collegiate Churches of Lichfield, Ripon, Southwell, York, and Manchester, and the Irish, Scotch, and Welsh Cathedrals (S. David's excepted), have no cloisters. Much of this difference in treatment is occasioned by difference in purpose. In England these churches often served a two-fold purpose and provided services for monks at one end and for laymen at the other; while in France the cathedrals were largely built and paid for by laymen themselves and were designed for their use. In England, owing to this conventual origin, the choir or eastern arm had to be large enough to accommodate the monks, and it was often nearly as long as the nave or western arm.

English cathedrals, which often formed part of a monastic group with cloisters (p. 345 J), refectory, and other buildings, are now set in a quiet "close" and not among the houses of the town, as is so usual in France (p. 440). They are long and narrow as compared with French; for whereas in France the length is seldom more than four times the width, due largely to the double aisles and side chapels, in England it is often as much as six times the width. This extreme length of vista, further emphasised by the comparatively low nave vault, gives English cathedrals much of their stately solemnity. There are fewer side chapels in England than in France, and this indicates the more general character of the services held for the laity. Many English cathedrals, such as Norwich and Canterbury, which were founded or remodelled after the Conquest by Norman prelates, had an apsidal east end which was sometimes developed into a chevet, but the English type reverted, as in Durham and Lincoln, to the square eastern termination of the Saxon prototype (p. 396 A, B). The transepts project considerably and secondary transepts occur, as at Salisbury, Canterbury, Lincoln, Wells, and Worcester, but in France the transepts are single and have little projection. The entrance was generally by a projecting south-western porch which acted as a screen against the wind, and is in contrast to the large recessed western portals which open directly into the nave in French cathedrals. The high central tower, as at Lincoln, York, Ely, Gloucester, Canterbury, and Durham,

is effective by contrast with the low nave; its height is sometimes further increased by a tapering spire, as at Salisbury and Norwich. Occasionally there are two western towers, while at Lichfield all three towers are crowned with spires (p. 351 B). Flying buttresses are not nearly so common as in France, owing to the comparative lowness of the nave vault. In France the flying buttresses to the chevet produce a complex, restless effect (p. 438 C) which is absent from the simple square east ends of English churches. A description of English cathedrals would be incomplete without a reference to the sculptured west fronts of Wells (p. 342 B) and Exeter, and to those internal fittings such as rood lofts, choir screens, carved stalls, misericords, bishops' thrones, sculptured reredoses, fonts, tombs, sedilia, pulpits, lecterns, brasses, triptychs, wall tablets, alms boxes, credences, oak chests, and other fittings which with the tiled floor not only give a rich and furnished appearance to the interiors of cathedrals and churches, but are also of importance as historical records (pp. 421, 422, 423, 424, 427, 428).

Chapter houses for the transaction of ecclesiastical business were originally square in plan, as at Canterbury (p. 333 B) and Bristol (A.D. 1142–70) (p. 335 K), but that at Durham (A.D. 1093–1140) (p. 333 E) was apsidal, and that at Worcester (A.D. 1084–1160) (p. 333 A) is circular. The normal type is octagonal with a centre pillar to support the vaulting, as Westminster (A.D. 1250) (pp. 353 D, 357 C), Salisbury (A.D. 1250) (pp. 332 E, 345 G), and Wells (A.D. 1292) (pp. 310 J, 334 J), but Lincoln (A.D. 1225) (pp. 332 F, 347 A) is decagonal. York chapter house (A.D. 1280–1330) (p. 332 B) is octagonal, 57 ft. in diameter, but has no central pillar, as the vault is of wood instead of stone.

A reference to the comparative plans (pp. 332, 333, 334, 335) will indicate the work of successive periods in each building, and the views of models (pp. 329, 330, 331) show the special features of a number of cathedrals. In the short notices which follow, Early English, Decorated, and Perpendicular are abbreviated respectively as E.E., Dec., and Perp., and an asterisk denotes those which were churches of Benedictine monasteries (p. 244).

1. **Bangor** (p. 334 D).—Repeatedly destroyed. Present church, which suffered much in the civil wars, is Dec. and Perp. Thoroughly restored by Sir G. Scott (A.D. 1866).

2. **Bristol** (pp. 331 A, 335 K).—Augustinian monastery. Rectangular Norman chapter house. E.E. "Elder Lady Chapel." Dec. choir (A.D. 1306–32); modern nave by Street to match choir. Peculiar in having nave and aisles of nearly equal height, with lofty aisle windows, as in German "hall" churches, without triforium and clear-story (p. 486 D). Remarkable canopied wall recesses.

3. ***Canterbury** (pp. 330 G, 333 B, 346).—Choir of great interest erected by William of Sens on the model of Sens Cathedral after destruction of Anselm's Norman choir (A.D. 1170). Work carried on under William the Englishman. Original Norman work of singular interest. Contraction in width of choir, to preserve two earlier Norman chapels. At extreme east is the curious chapel "Becket's Crown" and Patriarchal Chair (p. 428 C). Extensive crypts under eastern portion. Double transepts. Splendid late Perp. central tower. Perp. nave. West front and towers unimportant, except in general picturesqueness of group. Oblong chapter house with fine wooden ceiling. Perp. cloisters on north of great beauty. Numerous side chapels.

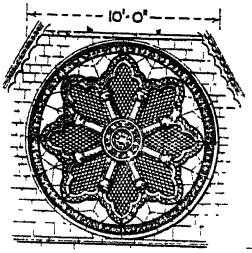
4. **Carlisle** (pp. 331 C, 335 B).—Augustinian Abbey. East end of beautiful design with fine tracery windows.

5. **Chester** (pp. 331 E, 335 F).—Originally the church of the Benedictine order of S. Werburgh. Built of red sandstone. Perp. central tower. Cloisters on north. Lady Chapel at east end.

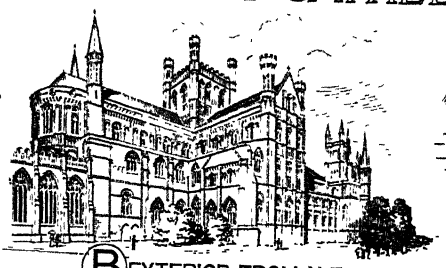
6. **Chichester** (pp. 329 F, 334 G).—Chief example of double aisles, resulting from former lateral chapels. Fine central spire. Norman nave. Bell-tower is the only detached example in an English cathedral.

7. ***Durham** (pp. 330 C, 333 E, 336).—Norman work (A.D. 1096–1133). Massive E.E. eastern transept called the "Chapel of the Nine Altars" (A.D. 1242–90) and central Perp.

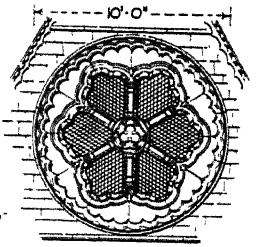
PETERBOROUGH CATHEDRAL



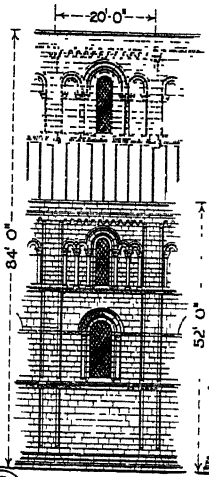
A ROSE WINDOW: CENTRE GABLE: W. FRONT



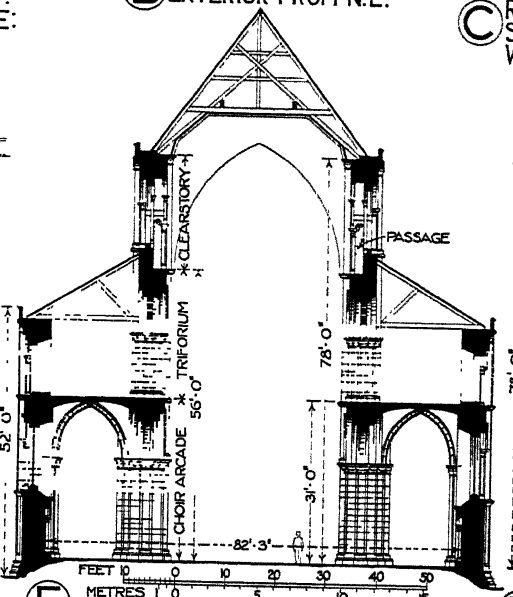
B EXTERIOR FROM N.E.



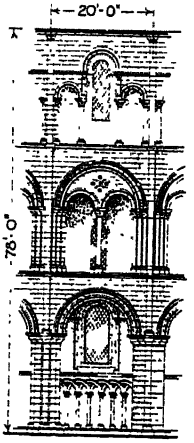
C ROSE WINDOW: SIDE GABLES: W. FRONT



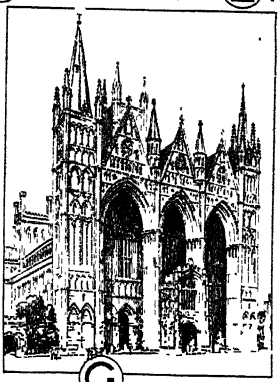
D EXTERNAL BAY



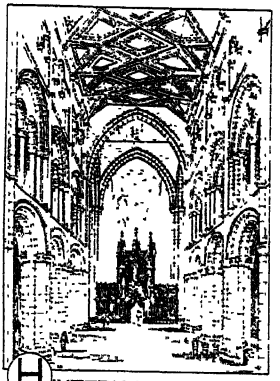
E TRANSVERSE SECTION THRO' CHOIR



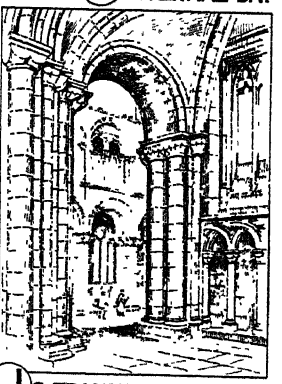
F INTERNAL BAY



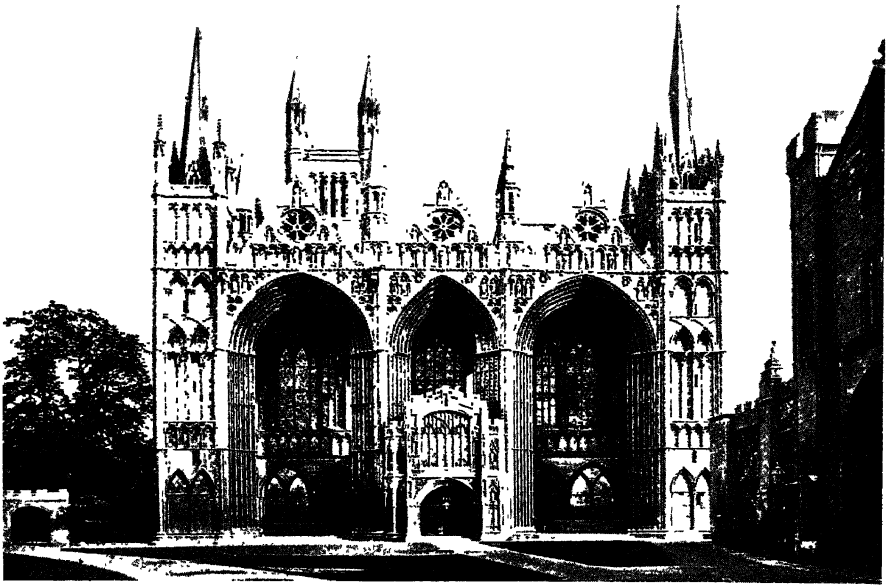
G W. FRONT



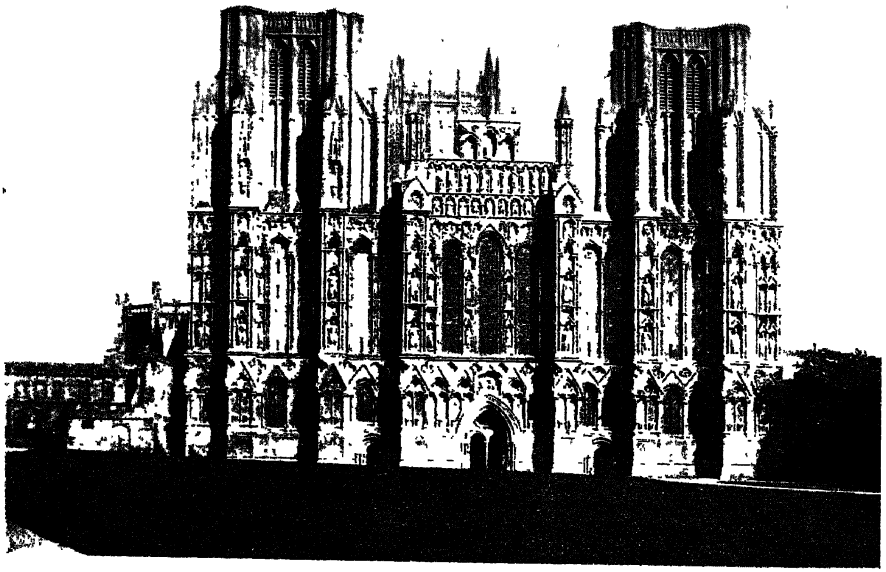
H INTERIOR LOOKING E.



J S. TRANSEPT LOOKG S.E.



A. Peterborough Cathedral: West Façade



B. Wells Cathedral: West Façade

tower. A group of great dignity which has few rivals. Norman nave (A.D. 1099–1128) is finest in England with pillars about same width as openings and quaintly channelled with spirals and flutes. Norman nave vault (A.D. 1133) said to be earliest in England.

8. *Ely (pp. 330 A, 332 A, 402 E, F, 403 J, K).—Norman nave and transepts with timber roof and modern painting. Choir remarkable for carving. Unique central octagon 70 ft. in diameter with unequal sides, by Alan of Walsingham (A.D. 1322), has rich wooden vault with octagonal lantern. This plan influenced that of S. Paul, London (p. 718 D). Exceptional Lady Chapel, 100 ft. by 46 ft. by 60 ft. high (cf. chapter house, Canterbury). Imposing west front (180 ft. wide) with high tower, the same width as nave, flanked originally both north and south by transepts with octagonal turrets. In front of the tower projects the E.E. vaulted Galilee porch (A.D. 1198–1215).

9. Exeter (pp. 329 D, 334 E).—Unique twin towers over north and south transepts (cf. S. Stephen, Vienna, p. 488). The finest specimen of the Dec. style and exceptionally rich in varied tracery and carved wood and stonework.

10. *Gloucester (pp. 330 D, 333 C).—Very rich in Early Perp. fan vaulting (p. 324 H). Norman choir cased with Perp. (cf. Winchester). Perp. fan-vaulted cloisters on north of singular completeness. Choir has largest Perp. windows in England. Elaborate Lady Chapel. Impressive central tower (225 ft. high) with internal flying buttress.

11. Hereford (pp. 331 F, 335 H).—Norman nave and choir. E.E. Lady Chapel and Dec. central tower.

12. Lichfield (pp. 329 E, 335 J, 351, 403 G, H).—Built of reddish stone on sloping ground. Nave, transepts, chapter house, and west front in E.E. style. Graceful central and western spires in Dec. style form the only triple group of spires in England. Spherical triangular clear-story windows. No cloisters.

13. Lincoln (pp. 330 H, 332 F, 347, 348).—Rebuilt (A.D. 1185–1200) on ridge of steep hill dominating town. Double transepts, western towers, and highest central tower (271 ft.) in England. Resembles Canterbury in general outline, but comparison with Canterbury shows how English treatment has here replaced French, and the term "National Lincoln" aptly describes its peculiar interest. E.E. nave, transepts, and choir. Dec. "Angel Choir" (A.D. 1256–1314). Cloisters on the north. E.E. decagonal chapter house, vaulted to central pillar and surrounded by flying buttresses. Unusual west front consists of screen wall behind which rise two western towers whose lower parts are invisible.

14. Llandaff (p. 335 C).—A long low building situated at foot of hill, without transepts or side chapels. Two western towers. Nave much restored. Square chapter house with central pillar. No triforium or cloisters.

15. Manchester (p. 334 B).—Perp. (A.D. 1422–1520). Remarkable for double aisles obtained, as at Chichester, by inclusion of side chapels. Fine stalls.

16. Newcastle.—Late Dec. in style. Perp. tower (A.D. 1474) with spire on crown of arches, similar to S. Giles, Edinburgh, King's College, Aberdeen, and S. Dunstan in the East, London. Fine modern stalls.

17. *Norwich (pp. 329 H, 333 D).—Long narrow Norman nave (A.D. 1096–1145), aisleless transepts, and choir with apsidal chapels. Bold central spire, choir, clear-story, some windows on south of nave and vaulting throughout are Perp. Eastern apsidal chapel replaced in thirteenth century by oblong Lady Chapel, since destroyed. Chapter house, resembling that of Durham, also destroyed.

18. Oxford (pp. 331 B, 334 C).—Originally an Augustinian Priory. Norman nave and choir (A.D. 1158–80). E.E. chapter house and Lady Chapel. Nave pillars, alternately circular and polygonal, support lofty Norman arches beneath which is triforium gallery —an unusual arrangement in order to give height. Norman central tower with E.E. upper part and short spire. Nave, shortened by Card. Wolsey when building his college of Christchurch, forms a vestibule to choir, which has fine vaulting with pendants.

19. *Peterborough (pp. 330 F, 332 D, 341, 342 A, 402 A, B).—A Norman cathedral (A.D. 1117–90) with finest interior after Durham. Nave timber roof is probably oldest in England, with painted wooden ceiling of lozenge-shaped compartments. Nave aisles vaulted (cf. Ely). Apsidal choir enclosed on the east by rectangular Late Perp. chapel, fan vaulted, as at King's College, Cambridge. Grand E.E. western façade (A.D. 1233), 158 ft. wide, has a portico of three gigantic arches, the full height of cathedral. A gable crowns each arch, and angle abutments are carried up as small towers with spires. Other towers rise immediately behind, over western bays of the aisles. Central arch-way encloses two-storeyed Perp. porch.

20. Ripon (pp. 329 B, 335 G, 402 C, D, 320).—Central and two western towers. Rich choir stalls with tabernacle work. Perfect E.E. western façade (restored by Sir G. Scott).

21. *Rochester (pp. 331 D, 334 H).—Norman nave and fine western doorways. E.E. walled-in choir and transepts. Perp. nave, clear-story and wooden roof.

22. *S. Albans (p. 334 F).—Much destroyed and altered in recent years. Norman nave (longest in England, 284 ft.), transepts, and choir. Western portion of nave is E.E. Dec. marble shrine of S. Alban discovered and re-erected by Sir G. Scott.

23. S. Asaph (p. 334 A).—Rebuilt in Dec. style. Perp. roof and choir stalls. Restored by Sir G. Scott.

24. S. Davids (p. 335 E).—Situated in valley of the Alan close to the sea. Central tower. Two-storeyed south porch. Nave arches support a carved oak roof of Perp. design (A.D. 1508). Dec. rood-screen.

25. Salisbury (pp. 329 G, 332 E, 345, 459 A).—On a level site, surrounded by the greensward of a wide "close," broken only by elm trees. Almost entirely in the E.E. style (A.D. 1220–58). Is characteristic of English Gothic, as Amiens is of French (p. 447). Double transepts, central tower, Dec. spire, 404 ft. high, the loftiest in England. West façade is unimpressive, but a fine vaulted north porch projects boldly. Dec. cloisters.

26. Southwark (S. Saviour, or S. Mary Overie) (pp. 303, 325).—E.E. choir. Restored nave.

27. Southwell (p. 334 K).—Norman nave transepts and towers. E.E. choir. Dec. octagonal chapter house without central pillar, the chief glory of the cathedral, probably the model for York. Rich and well-preserved carving. No cloisters.

28. Wells (pp. 329 A, 334 J, 342 B) (c. A.D. 1180–c. 1425).—E.E. nave, double transepts, and western bays of choir. The E.E. west front (150 ft. wide, including buttresses) is flanked by towers arcaded and enriched with sculpture—the highest development in English Gothic of this type of façade. Central tower, eastern Lady Chapel and octagonal chapter house. Unique triforium of close-set openings. As illustrating the comparative height to width of English and French cathedrals, Wells is 32 ft. wide and 67 ft. high (two to one) and Amiens is 46 ft. wide and 140 ft. high (three to one).

29. *Winchester (pp. 330 E, 332 C, 352, 403 L, M).—Has greatest total length (560 ft.) of any Mediæval cathedral in Europe. Norman transepts and tower (A.D. 1070–1107). Norman nave and choir (A.D. 1079–93) transformed by William of Wykeham and successors (A.D. 1394–1486) by veneer of Perp. on Norman core and a vaulted roof. Largest E.E. retro-choir in England with Dec. stalls (cf. Gloucester). Tombs and chantries. Timber vault to choir.

30. *Worcester (pp. 329 C, 333 A).—Level site on banks of Severn. Norman crypt, transepts, and circular chapter house (the only one in England). E.E. choir. Dec. and Perp. nave, cloisters, and central tower (196 ft. high). Interesting monuments, including royal chantries of King John and Prince Arthur (p. 391).

31. York (pp. 330 B, 332 B).—Largest in area and width, 106 ft. within the walls, of any English Mediæval cathedral. E.E. transepts remarkable for beauty of mouldings and the "five sisters"—a name given to lancet windows of north transept, each 50 ft. high and 5 ft. wide. Unique fourteenth-century stained glass. Nave and octagonal chapter house, with wooden roof and without central column, of Edwardian Gothic (A.D. 1261–1324). Perp. tower. No cloisters. Nave—second in height to Westminster Abbey—and choir have wooden imitation of stone vault. West front of French type. In spite of size the cathedral is less impressive than Durham in outline and grouping.

S. Paul, London.—See English Renaissance (p. 719).

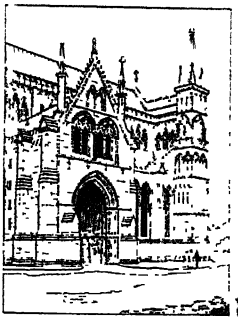
Note.—A comparative table which contrasts characteristics of English and French Gothic cathedrals is given (p. 457).

MONASTERIES

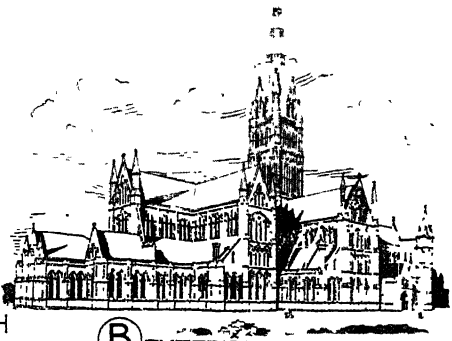
The importance of the monastic system during the Mediæval period throughout Europe and the general plan and purpose of monastic establishments are fully dealt with elsewhere (pp. 244, 248).

Westminster Abbey (pp. 353, 354, 357, 358, 543 A) stands on what was once Thorney Island, or the Eyot of Thorns, opposite an ancient ford across the Thames. Traditionally said to occupy the site of a church built by Sebert in A.D. 616, the Benedictine monastery was founded by S. Dunstan in A.D. 960, and partly rebuilt (A.D. 1055–65) by Edward the Confessor just before the Norman Conquest and dedicated to S. Peter. Early kings, from the Confessor onward, were busy pulling down, rebuilding, and bringing up to date, and so its character changed from Norman or Romanesque to Mediæval or

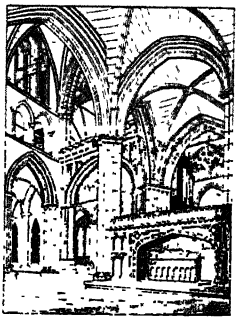
SALISBURY CATHEDRAL



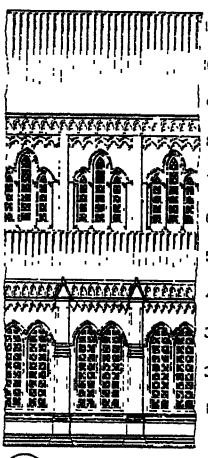
A THE NORTH PORCH



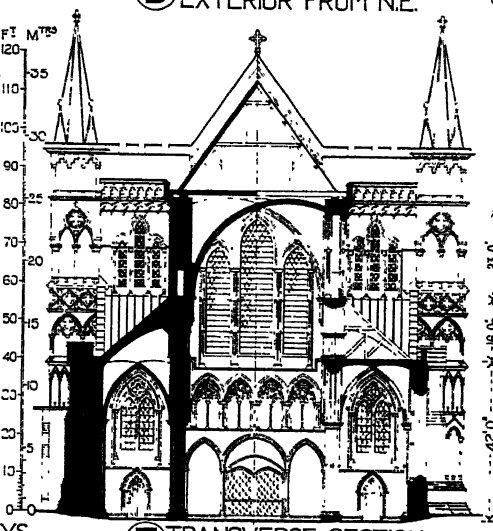
B EXTERIOR FROM N.E.



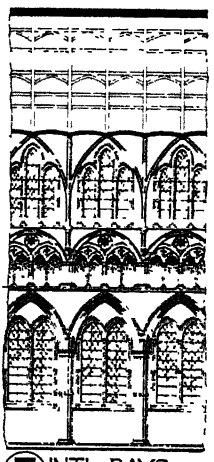
C INTERIOR LOOKING N.W. FROM SOUTH TRANSEPT



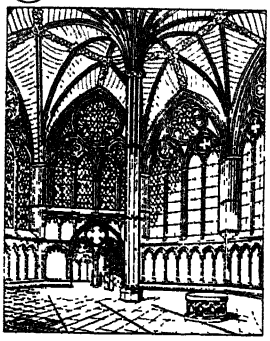
D EXTERNAL BAYS



E TRANSVERSE SECTION



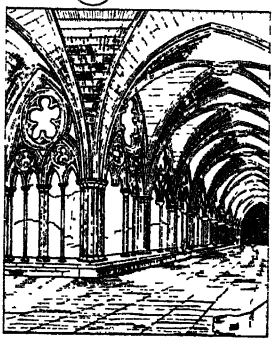
F INTL BAYS



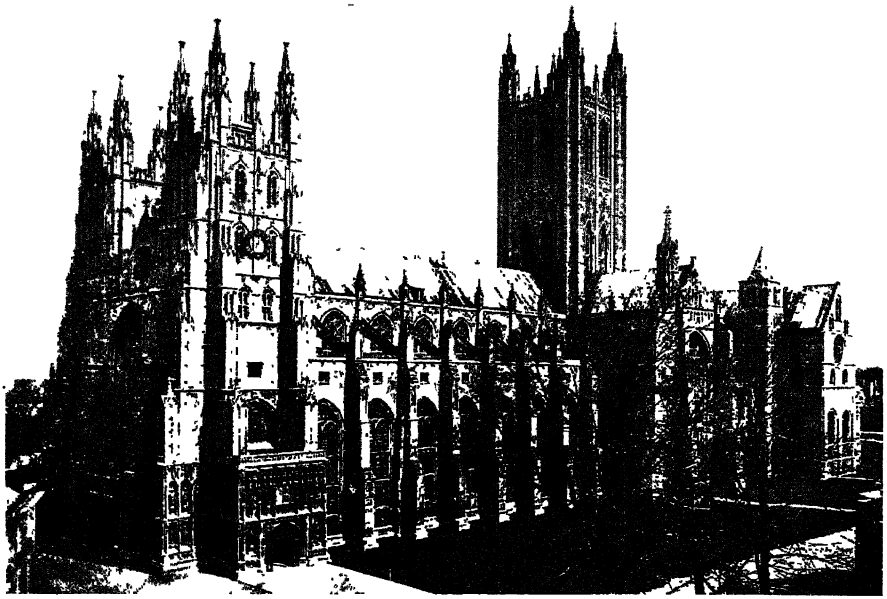
G CHAPTER HOUSE LOOKING W.



H NAVE LOOKING E.



J CLOISTER LOOKING S.W.

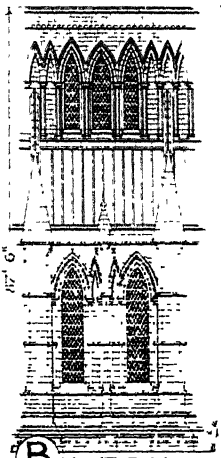


A. Canterbury Cathedral from S.W.



B. Canterbury Cathedral: Choir looking E.

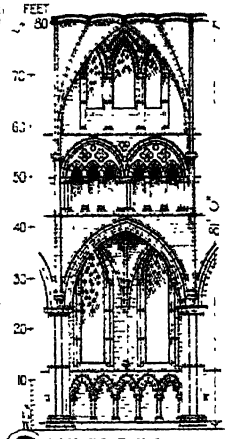
LINCOLN CATHEDRAL



B NAVE BAY (EXT)



A EXTERIOR FROM S.E

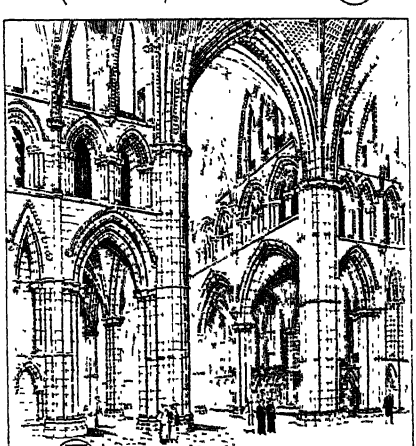


C NAVE BAY (INT)

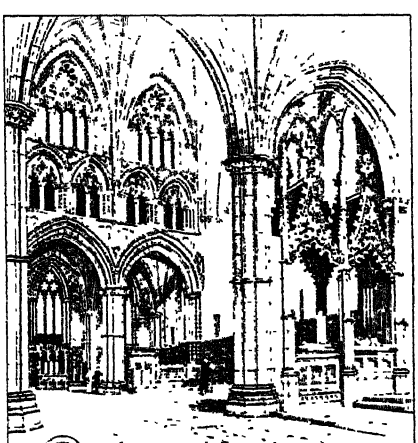


D SPANDREL: ANGEL CHOIR

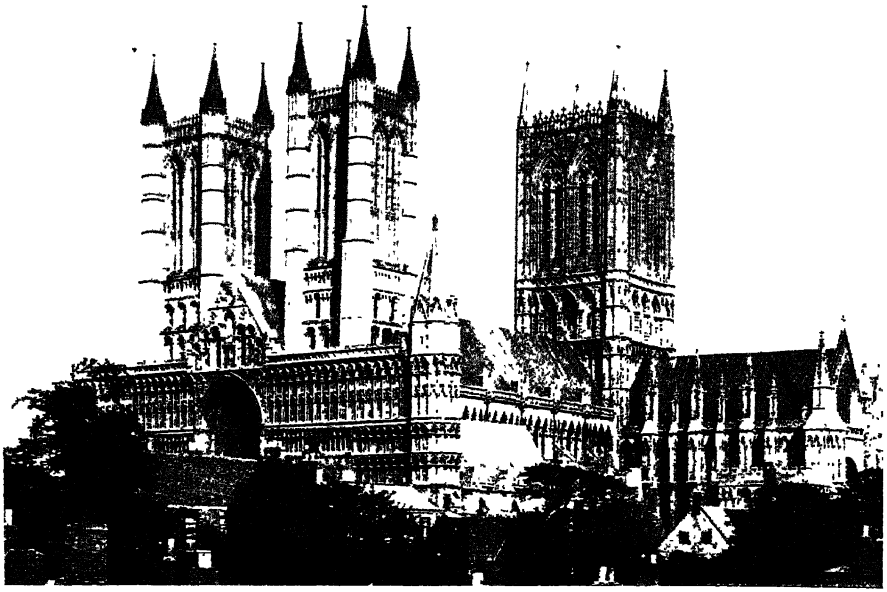
E LONGITUDINAL SECTION



F NAVE FROM S. TRANSEPT



G ANGEL CHOIR LOOKING N.E.



A. Lincoln Cathedral from S.W.



B. Lincoln Cathedral: Choir looking W.

Gothic ; and the successive and merging phases of Early English, Decorated, Perpendicular, and Tudor, with their own peculiarly English features, find a place in various parts of the abbey church ; while the Early Renaissance has also left its imprint on magnificent monuments, and even the more ponderous art of Queen Anne and the Georges is faithfully reproduced in the memorials to England's dead. Originally the church formed part of that great triple group—monastery, church, and royal palace—the last of which was superseded by the Houses of Parliament, thus keeping pace with the growth and changes of the English Constitution as it passed from absolute to constitutional monarchs and representative government.

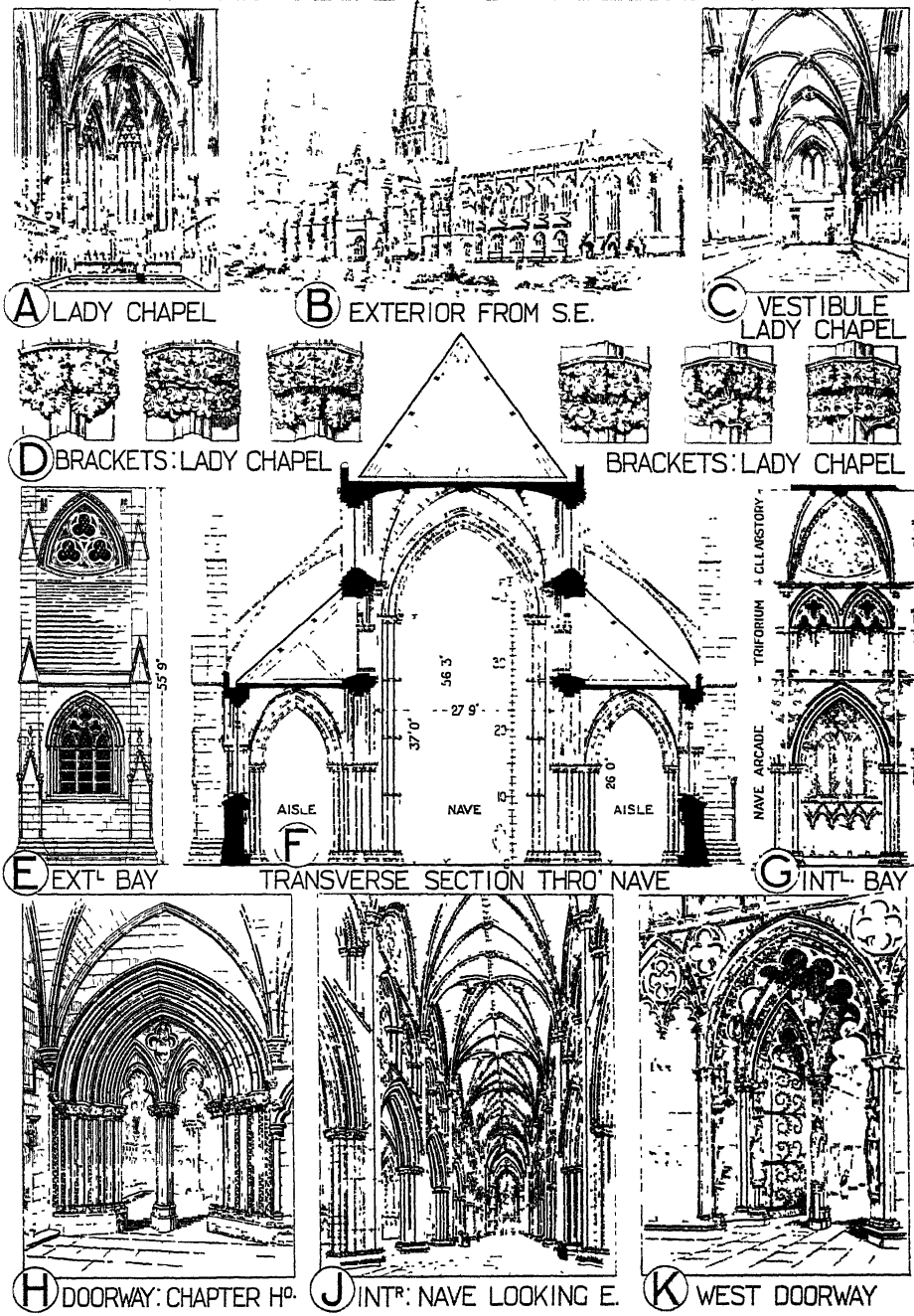
The monastery was one of the largest Benedictine foundations, with a typical lay-out (p. 354 H), which comprised the abbey church and a square cloister court, surrounded by open arcades of various dates (pp. 353 D, 354 A), with refectory, dormitory, and octagonal chapter house (A.D. 1250) (p. 353 D), with a fine vault (p. 357 C) whose thrusts are balanced internally on a slender clustered pier, and met externally by bold flying buttresses (p. 358 A). There was also a common court (now Dean's Yard), an inner court (now Little Dean's Yard), and the infirmary, besides mills, workshops, orchards, gardens, and the usual trout stream which, from the heights of Hampstead, here joined the Thames, and still runs under Great College Street. The precincts covered a large area, and formed a self-contained community, the germ of the later City of Westminster. Most of the existing monastic buildings date from the time of Abbot Litlington (mid-fourteenth century), and include the abbot's residence (now the Deanery), with Jerusalem Chamber and dining-hall ; but the Chapel of the Pyx and monks' day-room, forming the dormitory undercroft, come down from Edward the Confessor's time. The greater part of the abbey church was rebuilt on a grander scale by Henry III, and to him are due the present eastern arm, north and south transepts, one bay of the western arm, all erected between A.D. 1245 and 1260, and four more bays of the western arm, built between A.D. 1260 and 1269. For nearly a century building operations were suspended, and the old Norman nave still remained standing. The church is in the main French in character, and is largely based on Rheims (the French coronation church). It is an early example in England of the Geometric style, while the pinnacles and bar-tracery windows are among the first in this country. The eastern arm of the church, terminating in a polygonal apse, with ambulatory and cluster of surrounding chapels (pp. 353 D, 358 A), which form the only complete " chevet " in England, contains the much-venerated shrine of the Confessor, and the Coronation chair (p. 428 A). The Confessor's shrine (p. 354 J) stands in the centre of his chapel, and to this hallowed spot pilgrimages have been made from all parts of the world. Originally buried under the central tower of the Norman church, the body was translated to this shrine by Henry III in A.D. 1269. The monument, which was much damaged at the Reformation in A.D. 1538, is of Purbeck marble, and on each side of the pedestal are three trefoiled recesses in which sick people were placed in the hope of miraculous cures. Twisted columns at the angles, filled with glass mosaics, supported the reredos of the former altar, surmounted by a frieze of porphyry and serpentine ; the tomb is covered by an oak superstructure, added by Abbot Feckenham (A.D. 1554).

The interior of the Abbey betrays the French influence in loftiness and verticality produced by lancet arches and tall clear-story (p. 357 A, B). The north transept façade is emphatically French with cavernous porches and

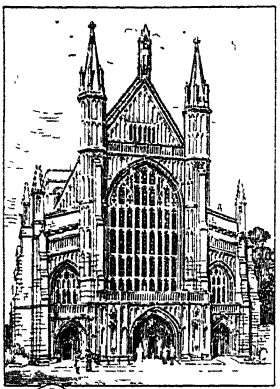
rose window (p. 354 B). The nave (p. 354 F), continued westward by Edward III and others (A.D. 1350–1420), adhered to the thirteenth-century general design, but the Perpendicular date is revealed in such details as piers and mouldings. The periods of the building of the church are clearly seen in the piers themselves; in the sanctuary and transepts a cylindrical pier is surrounded by four detached shafts of Purbeck marble, as was usual in the Early English period (pp. 354 C, 410 K, L); in the first five bays west of the crossing four attached shafts are added to these four, and in the western part of the nave all eight shafts are attached, i.e. formed on the pier itself (p. 354 E). The western towers were added (A.D. 1735–40) by John James or Nicholas Hawksmoor. The church, which has an extreme length of 511 ft. 6 ins., is notable for an unusually spacious triforium used for coronation ceremonials. Its nave vault, 102 ft. high (p. 324 D), the highest Gothic vault in England, has a complex system of strutting by flying buttresses across aisle and north cloister (pp. 354 A, 404 T). The church abounds with chapels and monuments, including—besides the Confessor's shrine—that of Henry III (p. 387 M) and other kings, and these with many others (p. 387 C, K, L) form a unique museum of sculpture of all periods, while over the east end of the ambulatory stands the richly sculptured fifteenth-century Chantry of Henry V (p. 354 G). At the extreme east end is the celebrated Chapel of Henry VII (A.D. 1502–12), built in the Tudor period as a magnificent mausoleum of the king, on the site of a Lady Chapel of A.D. 1220, and forming the culminating triumph of English Mediæval architecture (pp. 353 D, 358, 543 A). The tomb of Henry VII and of his queen Elizabeth of York (p. 708) is enclosed by a remarkable gun-metal screen of Gothic design, forming a chantry chapel. This is the chapel of the Knights of the Bath, and the low seats of the Esquires are backed by the richly carved canopied stalls of the Knights, embellished, as is the rest of the chapel, with elaborate heraldic devices (p. 424 F). The famous fan vault of lace-like tracery (p. 358), with pendants hanging apparently unsupported, is really constructed on half-concealed transverse arches of which the pendants are merely elongated voussoirs, and around these pendants the conoidal web is built up. Instead of being attached to the clear-story wall, as in previous experiments of the kind, the main conoids are advanced upon these arches so as not to interfere with the broad clear-story windows, and are supported on pendants, and connected to the clear-story by other conoids above the level of the springing of the windows. The buttresses of previous Gothic periods have here given place to octagonal piers, between which the windows form a mere screen, and are many-sided on plan, while the flying arches are filled with tracery (pp. 358 F, 404 P).

The Abbey is impressive as a triumph of English Gothic architecture, as an outward and visible sign of English religious devotion, and as a record in stone of English history. It has grown with our national growth, and has woven itself into the fabric of our nation's life. At once the most sacred and most famous shrine in our land, this venerable abbey represents the growth of centuries, both in its own building and in national history. From even before the time of the Confessor and onwards, it was slowly built, altered, adorned, and repaired. It has passed under the direction of divers master masons and architects, from Henry of Westminster down to Wren and James, Scott and Pearson. The Abbey and the Empire have always been closely associated; for not only did the Abbey Church serve the monks of the Benedictine monastery, but it was also the centre of popular pilgrimages to the Confessor's shrine. It has also, through the centuries, been the scene

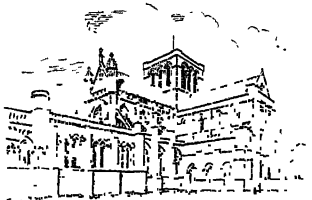
LICHFIELD CATHEDRAL



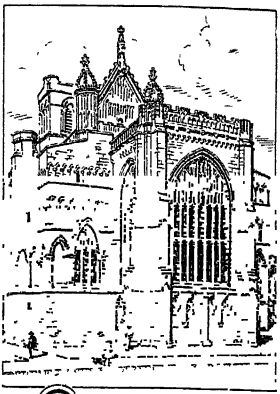
WINCHESTER CATHEDRAL



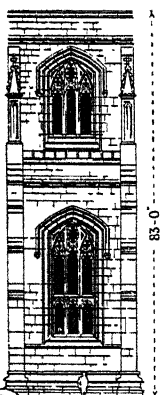
A WEST FRONT



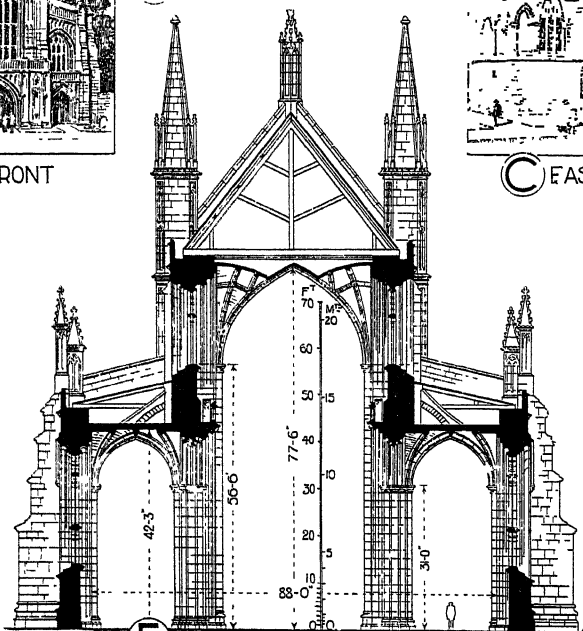
B GENERAL VIEW FROM N E



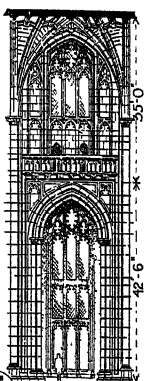
C EAST END



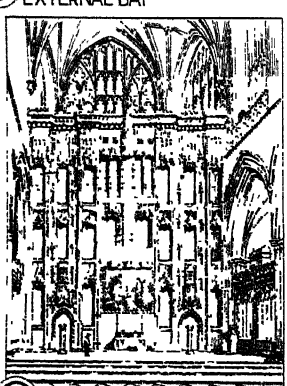
D EXTERNAL BAY



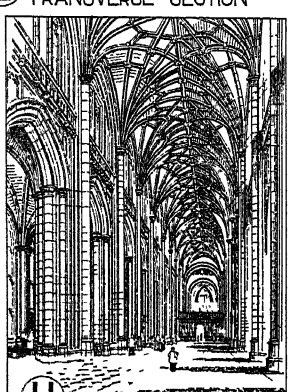
E TRANSVERSE SECTION



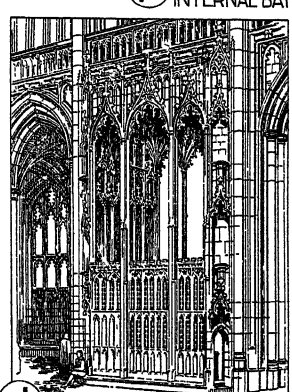
F INTERNAL BAY



G ALTAR SCREEN BEFORE RESTORATN

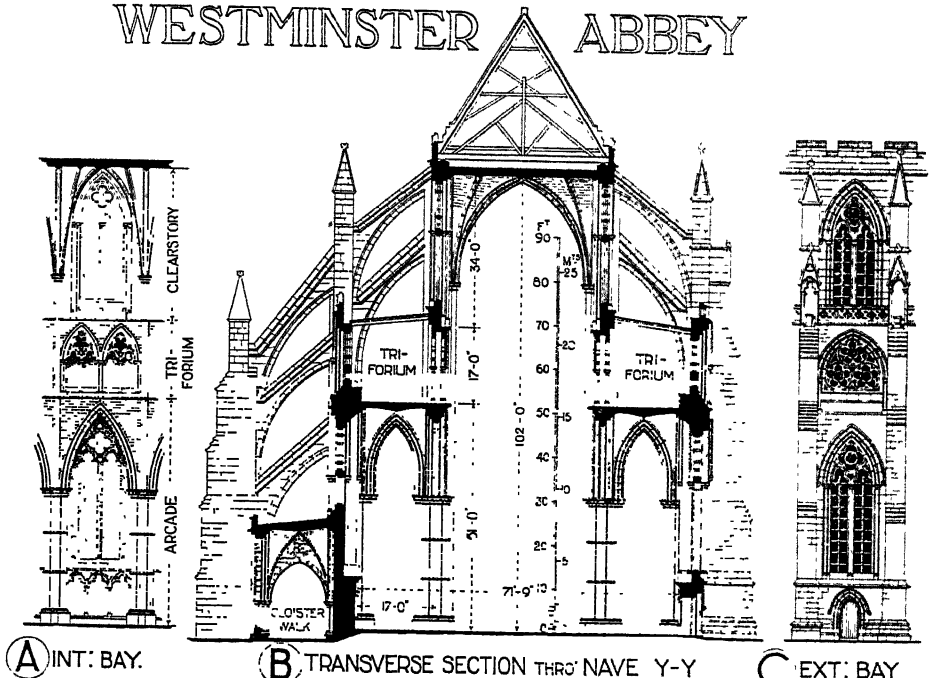


H NAVE LOOKING E



J WYKEHAM'S CHANTRY

WESTMINSTER ABBEY

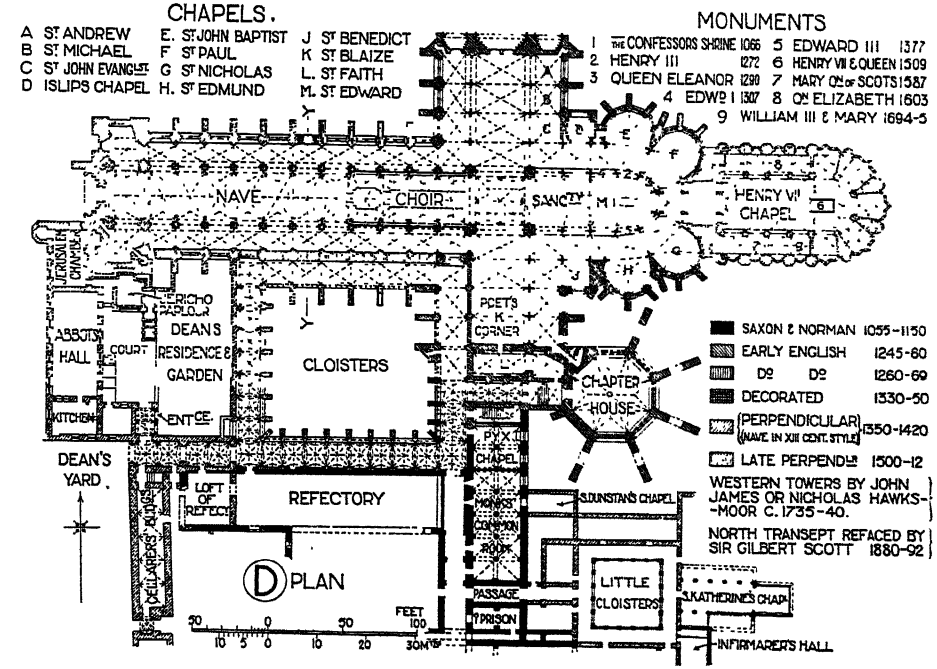


CHAPELS.

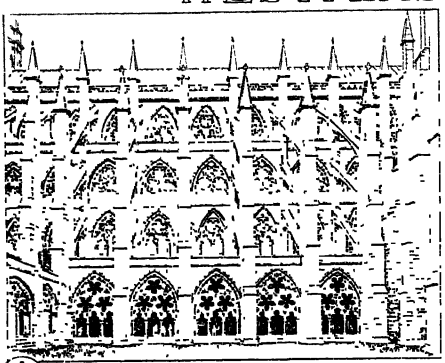
A ST ANDREW
B ST MICHAEL
C ST JOHN EVANGLIST
D ISLIPS CHAPEL
E. ST JOHN BAPTIST
F ST PAUL
G ST NICHOLAS
H. ST EDMUND
J ST BENEDICT
K ST BLAIZE
L. ST FAITH
M. ST EDWARD

MONUMENTS

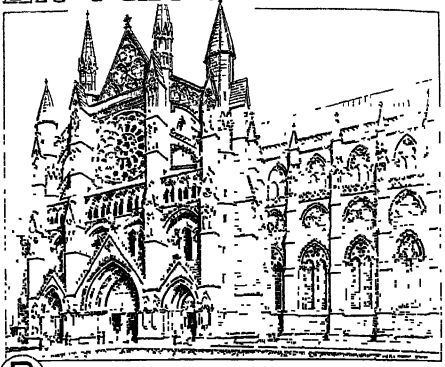
1 THE CONFESSORS SHRINE 1066
2 HENRY III 1272
3 QUEEN ELEANOR 1290
4 EDWD I 1307
5 EDWARD III 1377
6 HENRY VII & QUEEN 1509
7 MARY QN OF SCOTS 1587
8 QN ELIZABETH 1603
9 WILLIAM III & MARY 1694-5



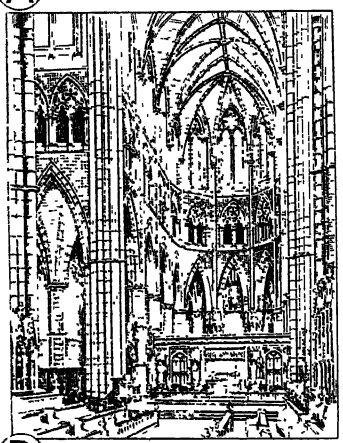
WESTMINSTER ABBEY



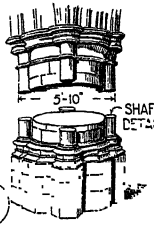
A S. SIDE OF NAVE FROM CLOISTERS



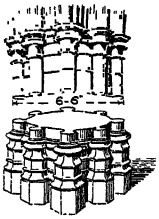
B N. TRANSEPT & PART OF NAVE



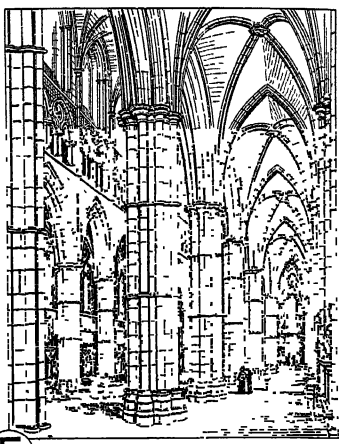
D THE CHEVET LOOKING E.



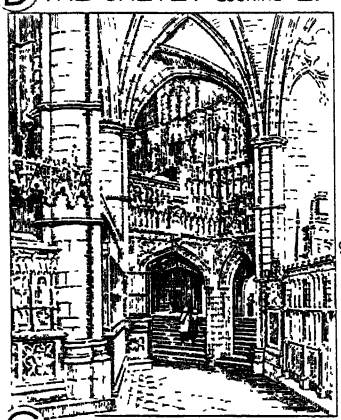
C SANCTUARY PIER
TEMP. HENRY III



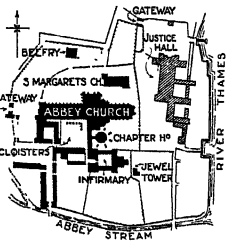
E NAVE PIER
TEMP EDWARD III



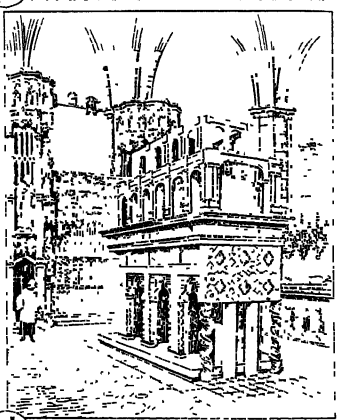
F N. AISLE OF NAVE LOOKING W.



G HENRY V's CHANTRY CHAPEL



H PLAN OF MONASTERY



J EDWARD THE CONFESSOR'S TOMB

of the gorgeous coronation pageants down to that of our present King ; as well as of those sombre ceremonies connected with the funerals of many of England's greatest sons, who have achieved distinction in every field of human endeavour. This association of " the Abbey " with the nation's recognition of those who have greatly dared is enshrined in the words of Nelson when, in the battle off Cape S. Vincent, he exclaimed : " Victory or Westminster Abbey ! "

In its structure it is an epitome of architectural art ; in its monuments and statues, tombs and tablets it is a record of the success of many men in many pursuits in many parts of the world : Roman Catholic, Anglican, and Non-conformist ; poet, priest, and king ; warrior, writer, and play-actor ; woman, scientist, and artist—all are commemorated within its walls. A royal foundation, associated with the memory of an English king, the burial-place of kings in the past, the coronation-place of kings to-day, the Abbey is, in very truth, the national shrine for the honoured dead, not of England only, but of the far-flung British Empire. The burial within its portals of the unknown warrior of the Great War is a symbol of our brotherhood in sacrifice, and a sign that Britain's national shrine is the common heritage of her hero sons.

Fountains Abbey, Yorkshire (p. 359), appears to have been founded (A.D. 1132) soon after Rievaulx, the first Cistercian establishment in that county, and to have been named from the springs in the valley of the Skell. Although in ruins, yet, owing to the care with which the place has been uncovered, it is easy here to make a mental picture of a great monastery (p. 359 A, C). The gatehouse (p. 359 B) led into the outer court ; south of this were the guest house and the infirmary of the conversi, or lay brethren, and east of it was the cellarium, no less than 300 ft. long, comprising store-houses and refectory of these conversi on the lower floor, with their dormitory above. Opposite the gatehouse is the conventual church, of which the nave and transepts date from about A.D. 1147, but the choir appears to have been enlarged between A.D. 1203 and 1247, and at the same time the transept known as the " Chapel of the Nine Altars " was built. The tower, by Abbot Huby (A.D. 1494–1526), is still the dominating feature in this beautiful valley. The door in the south-east angle of the nave leads into the cloister court, round which were ranged the chapter house, the monks' dormitory and its undercroft, the calefactory or warming house, the monks' refectory, the kitchen with two great fireplaces, and alongside was a washing lavatory, part of which still remains. Still farther east were the cells for refractory monks and the abbot's lodge, north of which a corridor led to the infirmary hall, with adjacent chapel, cellar, and kitchen. The chapter house, of which the vaulting is now destroyed, was rectangular, and against the walls were stone benches rising one above another on which the monks were wont to sit. The complete monastic establishment must have existed till the time of the Abbot William Thirsk (A.D. 1526–36), after which the estate was sold (A.D. 1540) to Sir Richard Gresham, whose successor pulled down the infirmary and the stone wall, and built Fountains Hall (p. 359 B) on the site in the reign of James I.

PARISH CHURCHES

The building of churches in England progressed on distinctly national lines, and the 9,000 parish churches of the Mediæval period indicate the evolution of the style, while the enlargement through the centuries of the parish church can be traced in the plans (p. 396).

S. Andrew, Heckington (A.D. 1345–80) (p. 360) is a fine type of English

parish church. It has (p. 360 C) a western tower, nave with aisles, south entrance porch, transepts, aisleless chancel with priest's door, square east end due to Anglo-Saxon influence, and a sacristy. The interior is on the lines of many parish churches, with close-boarded roof to the chancel and open timber roof to the nave (p. 360 B) ; while the exterior is simple and straightforward, with its single western tower and spire, long roof over the nave and lower roof to the chancel (p. 360 A).

Some larger parish churches which are cruciform on plan have the tower over the " crossing " of nave and transepts. A spire, usually octagonal, often crowns the tower, and the change from the square to the octagon was effected in the thirteenth century by means of a " broach " resting on angle squinch arches (p. 360 D, E) ; while in the following centuries parapets with elaborate pinnacles and flying buttresses connected the tower to the base of the spire. The principal entrance was either through a south porch near the west end or by a door under the tower in the west façade, and this gives dignity to the entrance. English village churches form in themselves a miniature history of ecclesiastical architecture in this country. Nearly every church has its own peculiar attraction, and with accessories and fittings makes up a gold mine of information for the student and antiquary (pp. 340, 419, 420, 422, 425).

There is no feature of these churches more typically English than the timber roof, with all its manifold variations of structure and design, as gradually developed out of the combinations of rafters and beams. These were manipulated by English carpenters to form varieties of roofing, much as the same simple timber material was skilfully woven together by the shipwrights to form the wooden walls of Old England. These timber roofs form such an integral part of multitudes of parish churches that the description of their construction is here given, which can be applied, according to the type, to analyse any given timber roof.

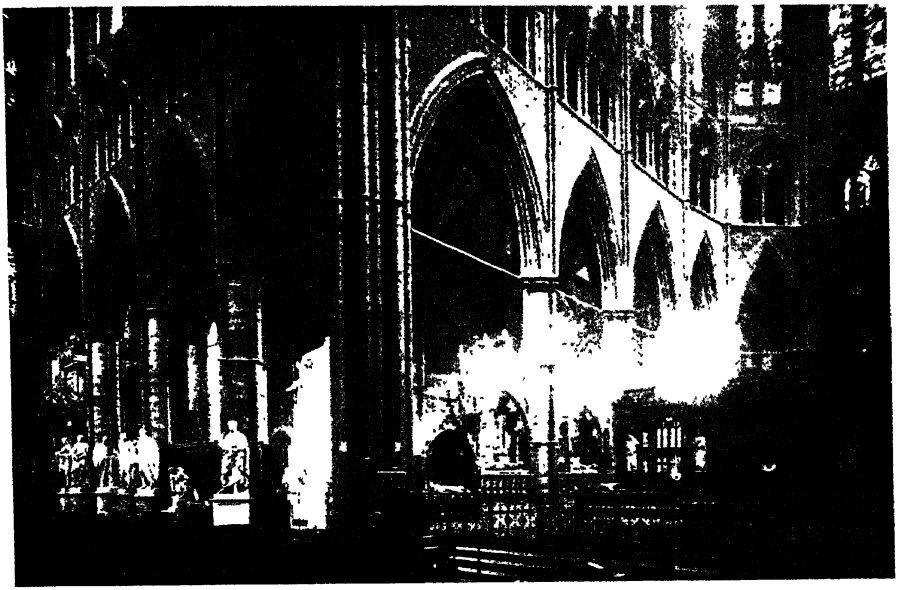
Timber Roofs

The English developed as did no other nation the construction of various types of open timber roofs, which culminated in the elaborate hammer-beam variety of the fifteenth century, often gaily painted in gold and colours. The French, on the contrary, favoured the stone vault, which generally necessitated external flying buttresses, and this makes a marked contrast, both internal and external, between the churches of the two countries.

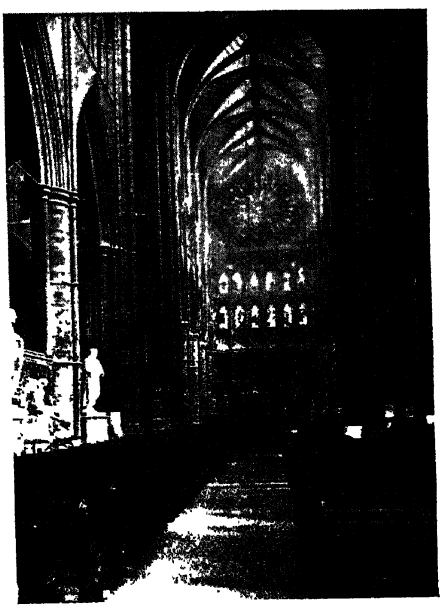
Timber roofs were beautiful features of English Mediæval interiors, and their intricate construction was an important part of parish churches (p. 355). Unlike vaulting there was little distinctive evolution in these timber roofs, and all types, with the exception of the hammer-beam, were used indiscriminately, and the chief changes took place in the inclination of the external roof.

The English open timber roofs of the Middle Ages (pp. 363, 409) may be classified as : (1) Tie-beam roofs. (2) Trussed rafter roofs. (3) Hammer-beam roofs. (4) Collar-braced roofs. (5) Aisle roofs.

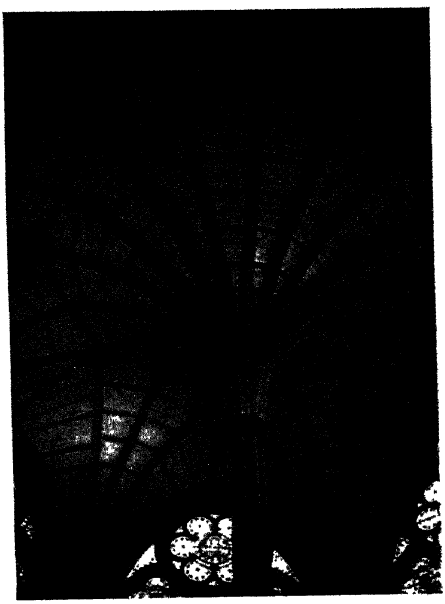
(1) The *Tie-beam roof* (p. 363 B, E) is the earliest and simplest, as it consists of two rafters pitched against one another with a tie-beam at their lower ends, to counteract the outward thrust on the walls. This was probably the only type in use during the Norman period, and it was never entirely discarded by Mediæval builders. The beam was originally pinned to the wall plates and was unconnected with the rafters, and various changes were made to make the truss harmonise with other features. The tie-beam usually



A. Westminster Abbey: N. Transept and Sanctuary



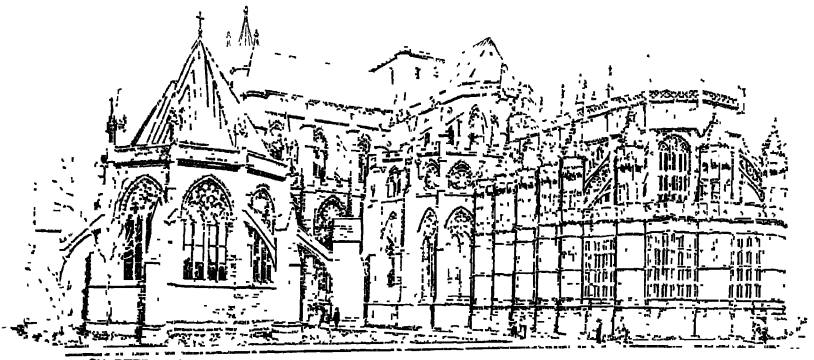
B. Transepts looking S.



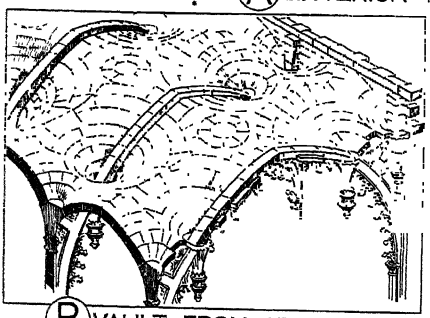
C. Chapter House Vault

Westminster Abbey

WESTMINSTER ABBEY: HENRY VII's CHAPEL.



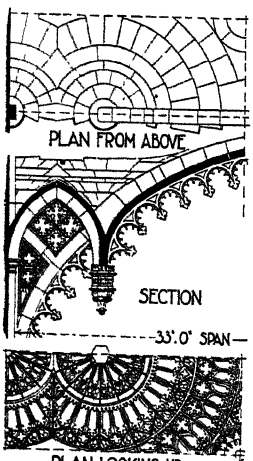
A EXTERIOR FROM S. E.



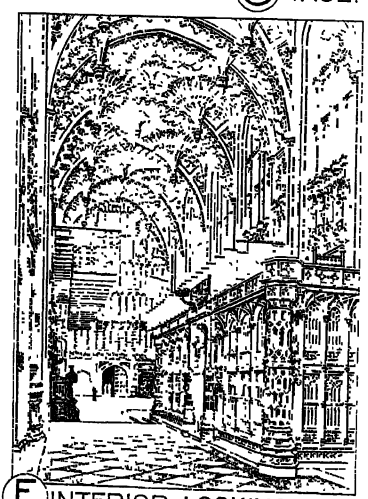
B VAULT FROM ABOVE



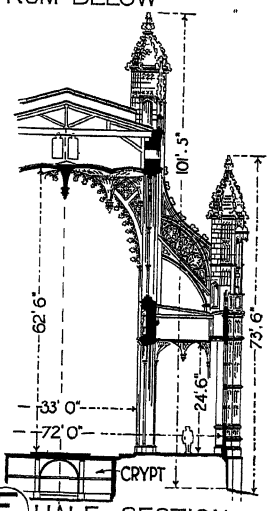
C VAULT FROM BELOW



D DETAILS OF VAULT

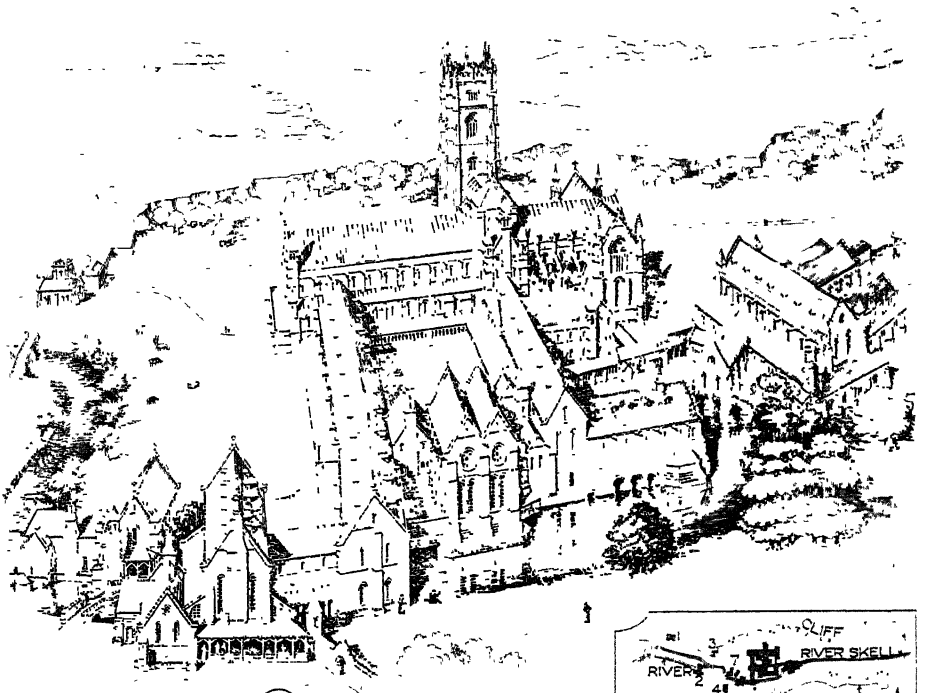


E INTERIOR LOOKING W.



F HALF-SECTION

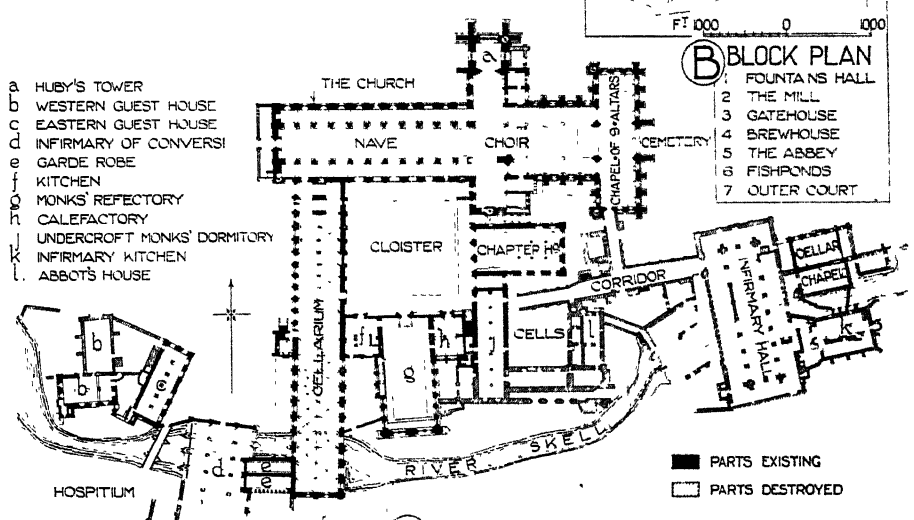
FOUNTAINS ABBEY: YORKSHIRE



A VIEW FROM S. (RESTORED)

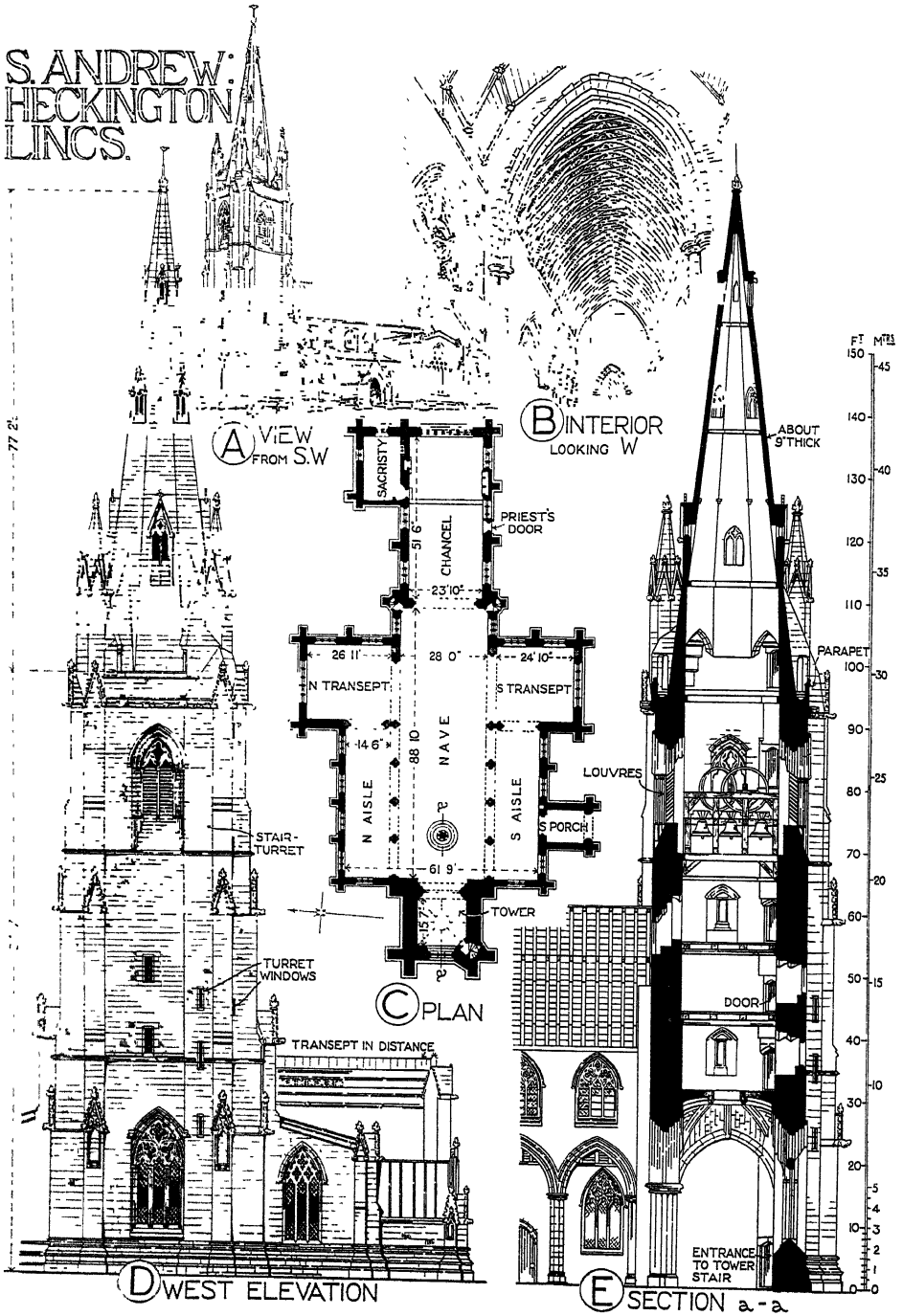
B BLOCK PLAN

1 FOUNTAINS HALL
2 THE MILL
3 GATEHOUSE
4 BREWHOUSE
5 THE ABBEY
6 FISHPONDS
7 OUTER COURT



C PLAN

FEET 100 50 0 100 200
METRES 10 0 10 20 30 40 50 60


S. ANDREW:
HECKINGTON
LINCS.
A VIEW FROM S.W
B INTERIOR LOOKING W
C PLAN
D WEST ELEVATION
E SECTION a-a
SACRIST
PRIEST'S DOOR
CHANCEL
51 6
23'10½
26 11
28 0
24'10½
N TRANSEPT
S TRANSEPT
14.6
88 10
NAVE
N AISLE
S AISLE
S PORCH
61 9
TOWER
15'7½
STAIR-TURRET
TURRET WINDOWS
TRANSEPT IN DISTANCE
77 2
ABOUT 9"THICK
PARAPET
LOUVRES
DOOR
ENTRANCE TO TOWER STAIR
FT
Mtrs
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
45
40
35
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25
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curved slightly upwards towards the centre, and in the Perpendicular period, when the purlins rested immediately on it, the low pitch of the roof was determined by this curve, as at Wellingborough. In roofs of steeper pitch the space above the tie-beam was filled in with posts and carved tracery, as at Outwell, Norfolk. A central king-post and side struts were often supported on the tie-beam to strengthen the framework, and this is in contrast to the scientific method applied to modern roofs, in which the king-post itself is suspended from the apex of the rafters to hold up the tie-beam. Curved braces often connect the tie-beam with vertical wall pieces, and thus the whole was framed together in the form of a depressed four-centred arch, as at Outwell. Another method was to make a pointed timber arch spring from the vertical wall piece below the tie-beam, but as this arch was intersected by the horizontal tie-beam the effect, as is seen in Morton Church, Lincolnshire, is not satisfactory.

(2) *Trussed rafter roofs* (p. 363 A) probably originated in the need for sufficient space for the pointed vaults beneath, and as this roof gave an appearance of greater height and impressiveness to the interior it was often adopted in preference to the old tie-beam type. Each rafter had a collar stiffened by braces, which were passed through the collar, as at Lympenhoe Church, Norfolk, or stopped on the underside, as at Stow Bardolph Church. The rafters rested on the outer portion of the wall, and thus left an unsightly ledge on the inside, covered by upright struts which also added to the stability of the roof. The triangle thus formed is held to be the origin of the hammer-beam roof (p. 363 K). The arched trussed rafter roof was obtained by the use of curved timbers connecting the rafters and collars, as at Solihull Church. The roof was often lined with boards which formed a pentagonal ceiling ornamented with ribs and bosses, when it is known as a barrel roof, as at Wimbotsham, Norfolk (p. 363 C).

(3) The *Hammer-beam roof* was evolved at the end of the fourteenth century from the triangle at the foot of the trussed rafter roof (p. 363 F, H, L). It consists of a series of trusses, repeated at intervals, to support the intermediate purlins and rafters, and its object is to transmit the weight and thrust of the roof as low down as possible in the supporting wall. The component parts of each truss are the two principal rafters and hammer-beams with struts, curved braces, and collars which vary in number and design. The hammer-beam itself is merely a lengthened sole piece (p. 363 K), of which the projecting part is supported by a curved brace from the wall piece, and in its turn it supports a vertical strut to the principal rafter. This rigid system of timbers, all tenoned and pinned together, is designed to resist the outward pressure of the rafters, and is supplemented in the Gothic period by external buttresses. It has been suggested that the hammer-beam was the result of cutting away the centre of the tie-beam after the introduction of the curved brace, but there is little in common between a hammer-beam and a tie-beam roof, except that, in both, the trusses are at intervals. Moreover the tie-beam was used even in conjunction with the hammer-beam, as at Outwell, where the alternate trusses have hammer-beams. The chief varieties of the hammer-beam roof are: (*a*) Those with hammer-beams, struts, collars, and curved braces, as at Little Welnetham, Suffolk. (*b*) Those in which the collar-beam is omitted and curved braces are carried up to a wedge-shaped strut at the ridge, as at Wymondham, Norfolk (p. 363 H), and Trunch, Norfolk (p. 363 F). (*c*) Those in which short hammer-beams support curved braces instead of struts, with collar-beams above, as at Capel

S. Mary, Suffolk. (*d*) Those without collars or struts, in which curved braces rise from hammer-beam to ridge, as at Palgrave, Suffolk. (*e*) Those with an arched rib which, springing from wall piece to collar, gives additional rigidity, as at Eltham Palace (p. 409 G), and in that most magnificent of all timber roofs at Westminster Hall, which dates as early as A.D. 1399 (p. 409). (*f*) Double hammer-beam roofs, as at S. Margaret, Ipswich, Knapton (p. 363 L) and Middle Temple Hall (A.D. 1572) (p. 409 H), have a second range of hammer-beams further to stiffen the principals and transmit the weight through the first range to the wall.

(4) *Collar-braced roofs* (p. 363 D) are a simplification of the hammer-beam form, and include arch-braced roofs, in which the arched brace is carried to the ridge without the intervention of a collar (p. 382 C). In this form the braces are of the same thickness as the principal rafters of which they appear to form part, as at Brinton, Norfolk ; whereas in the collar-braced roofs they are not more than 4 ins. thick, while the principals may be 10 ins., as at Pulham, Norfolk. These curved braces serve to strengthen the trusses, while they transmit the weight lower down the wall, which they thus help to steady. A roof of this class still exists at Stokesay Castle (p. 365 B).

(5) *Aisle Roofs* (p. 363 G, J), which were usually of a simple character, began as merely a continuation of the nave rafters, but trusses were soon introduced to support purlins, as at New Walsingham, Norfolk, and Ixworth, Suffolk. At North Walsham, Norfolk, the tie-beam of the aisle roof is carried through the nave wall to form a corbel for the wall piece of the nave roof, thus binding the whole together.

CASTLES

Just as the parish church is an indication of the religious life of the people, so is the English home, whether feudal castle or manor house, an index of social life under the feudal system, when every castle was not only a fortified stronghold, but also, like the manor house, a centre for administering justice and dispensing hospitality. Castles were built with little regard for domestic comfort and often retained their fortified character till the fifteenth century (pp. 364, 365, 366).

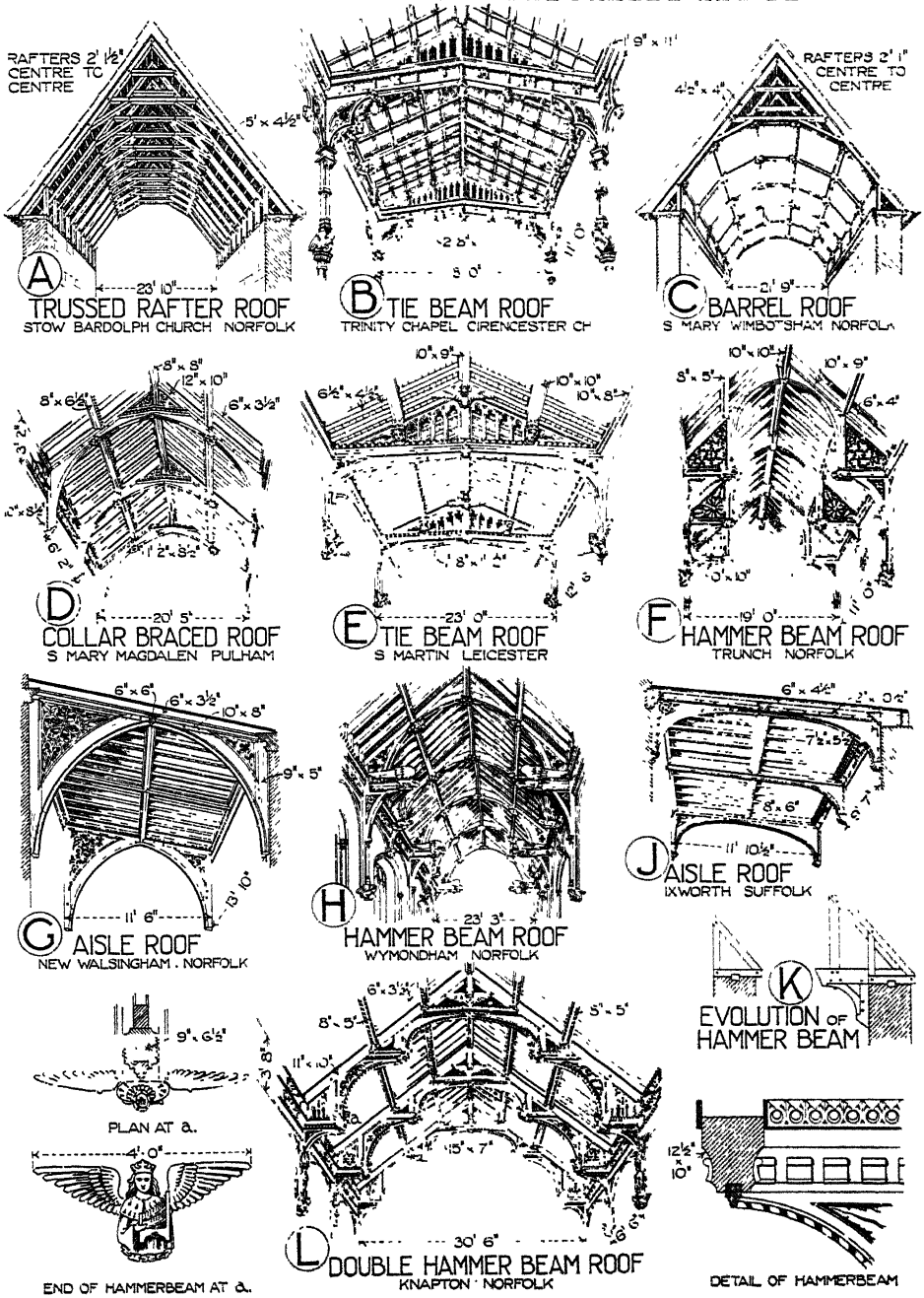
Anglo-Saxon period.—Castles had little architectural character, for they were chiefly earthworks, with a wooden tower and palisading.

Norman period.—During the eleventh and twelfth centuries the feudal system necessitated a permanent stronghold for the feudal lord, and castles were therefore most important buildings. The unsettled conditions of the period are reflected in the number of castles attributed to the reign of Stephen alone. These Norman castles had keeps of two types in common use, *i.e.* " shell " and rectangular.

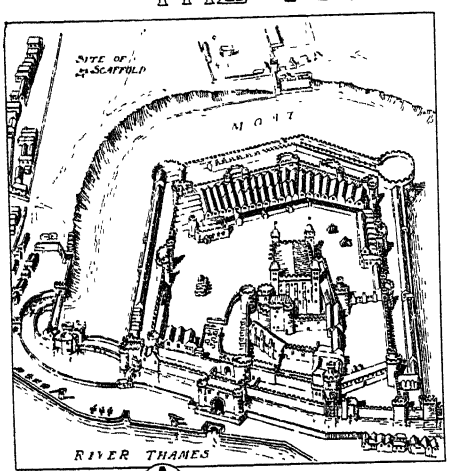
The " Shell " keep was built on existing earthworks, its wall of masonry circling the mound on which it was built, replacing earlier timber palisading, and it was developed from the " motte and bailey " castle, with its bailey or court at the base of the motte or mound, and a surrounding fosse or ditch. Earthworks thus gave way to masonry and architecture came in. **Berkeley** (A.D. 1155), **Carisbrooke, Pontefract, Windsor,** and **Durham** are among the numerous castles with " shell " keeps.

The Rectangular keep, introduced from France and used contemporaneously with the shell keep, was erected on sites other than those suitable for a " motte and bailey " castle. It was generally four storeys in height and

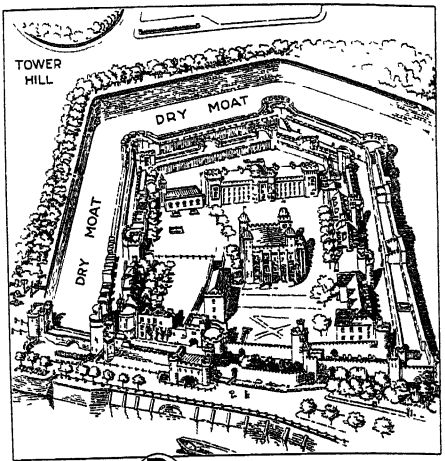
TYPES OF TIMBER CHURCH ROOFS

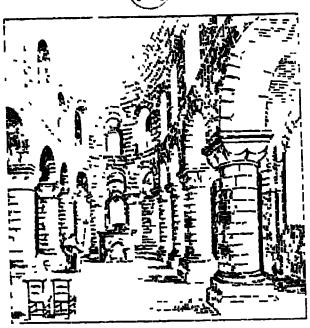


THE TOWER OF LONDON

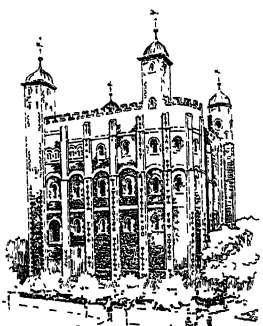


A A·D 1597 BIRD'S EYE VIEWS B A·D 1918.

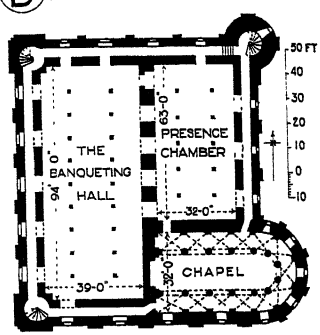




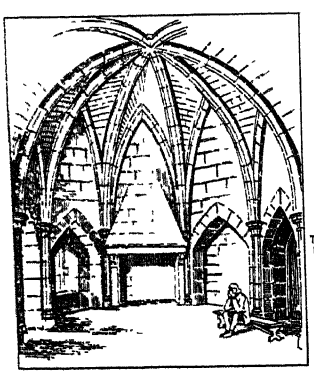
C INTERIOR OF S JOHN'S CHAPEL LOOKING E.



D WHITE TOWER FROM S.E.

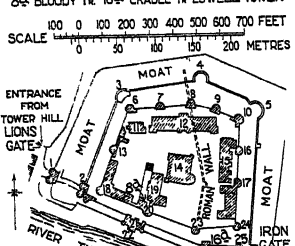


E PLAN OF WHITE TOWER AT THIRD FLOOR LEVEL



F INTERIOR OF BYWARD TOWER

1 MIDDLE TOWER 9 BRICK TOWER 17 BROAD ARROW Tr
2 BYWARD " 10 MARTIN " 18 BELL TOWER
3 LEGGE'S MOUNT 11 S PETER'S Ch. 19 GUARD HOUSE
4 N BASTION 12 WATERLOO Bks 20 WAKEFIELD Tr
5 BRASS MOUNT 13 BEAUCHAMP Tr 21 S THOMAS'S "
6 DEVEREUX Tr. 14 WHITE TOWER 22 TRAITORS GATE
7 FLINT TOWER 15 BARRACKS 23 LANTHORN Tr
8 BOWYER TOWR 16 CONSTABLE Tr 24 SALT TOWER.
8a BLOODY Tr. 16a CRADLE Tr 25 WELL TOWER

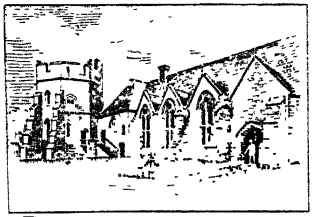


G BLOCK PLAN

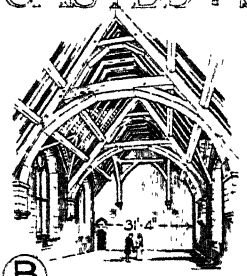


H BLOODY TOWER GATEWAY TRAITOR'S GATE BEYOND

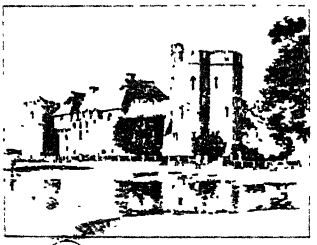
STOKESAY CASTLE : SHROPSHIRE



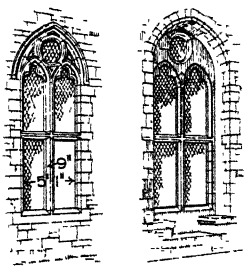
A GREAT HALL & TOWER FROM COURT



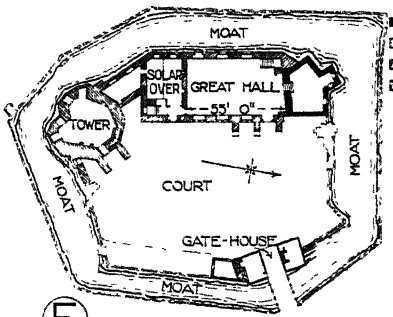
B INTERIOR OF HALL



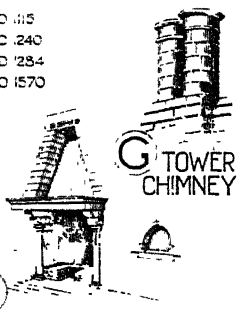
C VIEW FROM SW.



D WINDOW IN GT. HALL



E PLAN



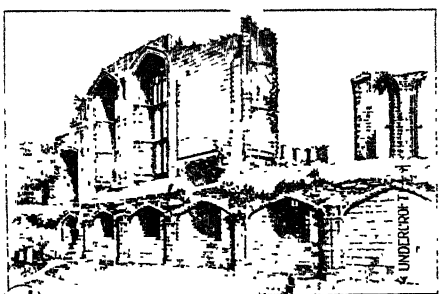
G TOWER CHIMNEY

F FIREPLACE IN N. ROOM

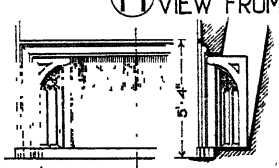
KENILWORTH CASTLE : WARWICKSHIRE

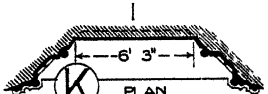


H VIEW FROM W.

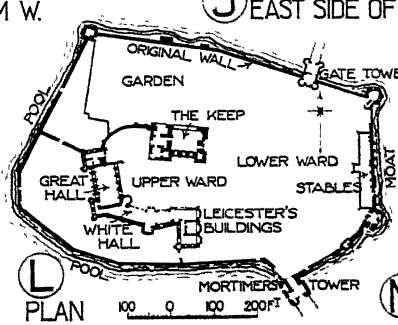


J EAST SIDE OF THE GREAT HALL

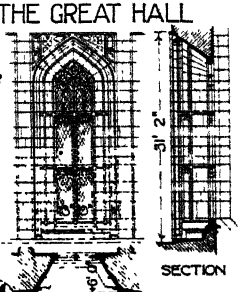




K FIREPLACE IN GT. HALL

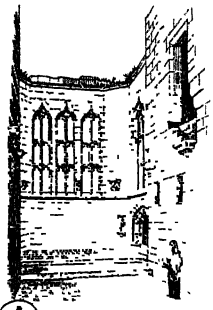


L PLAN

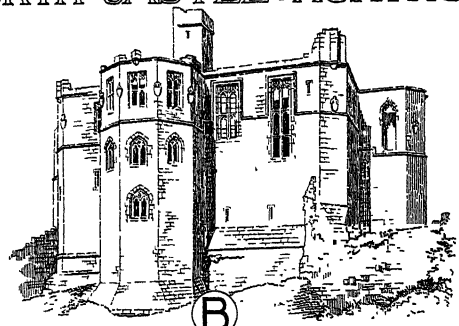


M HALL WINDOW

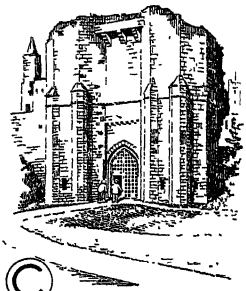
WARKWORTH CASTLE: NORTHUMBERLAND



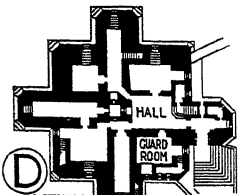
A INTR & CHAPEL



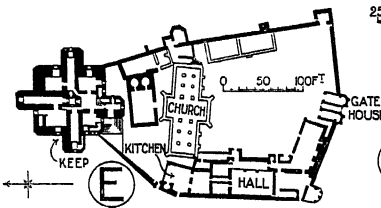
B THE KEEP FROM S.E.



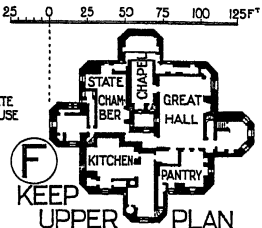
C THE GATEHOUSE



D KEEP LOWER PLAN

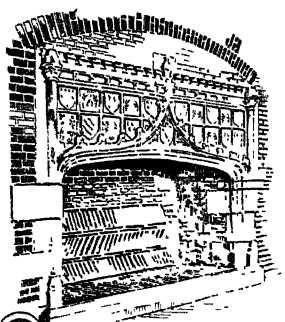


E GENERAL PLAN

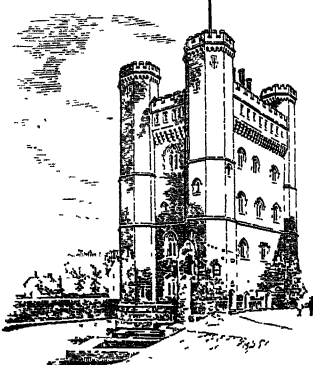


F KEEP UPPER PLAN

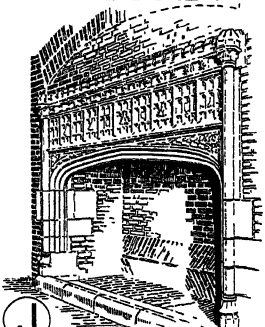
TATTERSHALL CASTLE: LINCS.



G HALL CHIMNEY-PIECE



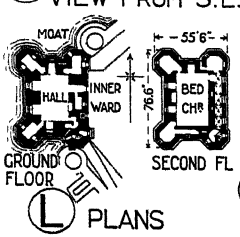
H VIEW FROM S.E.



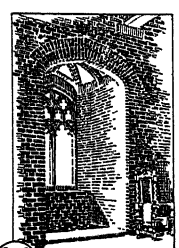
J CHIMNEY-PIECE: SECOND FLOOR



K AUDIENCE CHAMBER ON FIRST FLOOR



L PLANS



M WINDOW-RECESS IN HALL



N VAULTED CORRIDOR

stood in a bailey surrounded by a lofty wall of *enceinte* and deep moat. The entrance was usually on the first floor, sometimes further protected by a "fore-building," and the hall, on the main floor, was reached by spiral stairs in an angle turret, with the "solar" or withdrawing-room above.

The **Tower of London** (A.D. 1081–90) (p. 364), built by Bishop Gundulf for William I, assumed, only after successive reigns, its complete form as a concentric castle, with successive lines of fortifications—a plan derived, it is suggested, from Saracenic models. Here the rectangular keep of four storeys, 92 ft. in height, stands in the centre of an inner bailey, surrounded by a wall with thirteen towers, which is, in its turn, enclosed by an outer bailey and wall with eight towers and an encircling moat. The illustrations show the general arrangement of this rectangular keep and surrounding wards, together with the interior of the Byward Tower (p. 364 F) and the Bloody Tower Gateway (p. 364 H).

Other examples, numbering about fifty, include **Colchester, Rochester,** with wall fireplace (p. 428 L), **Kenilworth** keep (p. 365 H), **Dover, Richmond** (Yorks), and **Hedingham** (Essex), recently damaged by fire.

The Circular keep is another French form brought over by Henry II, which was, however, not adopted for any castle of first rank in England, but there are examples at **Conisborough,** with a fine fireplace (p. 428 N), and **Launceston.**

Early English period.—During the thirteenth century, castles were enlarged by additional buildings which clustered round the Norman keep. These inconvenient four-storeyed keeps, necessary in turbulent times, were, owing to the increase of hospitality, frequently abandoned as residences in favour of a hall with large hooded wall fireplace and additional living-rooms conveniently placed in the inner court, as at **Stokesay Castle, Shropshire** (A.D. 1240–90) (p. 365), which is a complete specimen of an Early English castle with gatehouse (since rebuilt) and surrounding moat. The Welsh castles of Edward I, such as **Caerphilly, Beaumaris, Conway,** and **Pembroke,** were designed on the concentric plan. The portcullis to the entrance tower and the encircling walls with battlements, alures, and machicolations, from which stones, hot tar, and quicklime could be dropped on besiegers, were the outstanding features of Early English military architecture. **Barnard Castle** has a fine circular keep.

Decorated period.—During the fourteenth century castles were increasingly adapted to meet domestic comfort on the model of manor houses.

Kenilworth Castle (p. 365), like many another, was altered, for the Norman keep (A.D. 1120), retained for defence, was incorporated into a plan of concentric type, which included a magnificent entrance porch and banqueting-hall dating from A.D. 1392 with daïs, screens, kitchens, and other offices. Henry VIII added certain portions, and during the reign of Elizabeth the Earl of Leicester built the great gatehouse, altered the Norman keep, and erected the portion known as Leicester's Buildings A.D. 1571. The castle is further protected by a lake of over 100 acres.

Raby Castle, Durham, has a fine detached kitchen, probably so placed as a security against the spread of fire, while **Haworth Castle,** Yorks., parts of **Broughton Castle,** Oxfordshire (p. 374), and **Ludlow Castle,** Shropshire, also date from this period. The Pele towers on the borders both of Scotland and Wales, built to overawe those countries, were continued on the original defensive and comfortless lines as late as the sixteenth century.

Perpendicular period.—During the fifteenth century the castle was subject to further modifications, due to the increase of the royal power and cor-

responding decrease in the rivalry of the nobles, and changed methods in military tactics. The typical castle consisted of a quadrangle surrounded by the various buildings and high walls strengthened by towers and a defensive moat. The gloomy old castles gradually gave way to a more cheerful treatment which, although still fortified, was designed for comfort as well as for defence. In the border counties, however, old castles, such as Alnwick, retained their fortified character and new ones were erected to meet the needs of districts where raids were frequent and racial strife recurrent.

Warwick Castle rises magnificently above the river Avon with Cæsar's and Guy's towers, and by reason of its portcullis, battlemented walls, and machicolations was, before the time of gunpowder, well-nigh impregnable.

Warkworth Castle (p. 366), belonging to the Duke of Northumberland, is on the apex of a peninsula surrounded on three sides by a river, and originally dates from the twelfth century. The keep, rebuilt in A.D. 1440 by Henry Percy, son of Hotspur, on the Norman foundations, and recently restored, is of peculiar shape, square with projections on each face. The doorway on the south leads into the hall, with the guard-room on the left and the dungeon beneath. The great hall on the upper floor is 50 ft. long, 30 ft. broad, and 20 ft. high, and alongside it is the chapel. The courtyard (p. 366 E) covering an acre south of the keep, is protected by twelfth-century walls and approached through the gatehouse (p. 366 C), which was strongly fortified by a portcullis and machicolations. In the courtyard are the foundations of a hall, kitchen, and church, which last dates from the time of Henry VIII.

Other examples are **Hurstmonceaux, Bodiam,** and **Lumley Castle,** Durham.

Tudor period.—**Tattershall Castle, Lincolnshire** (A.D. 1440) (p. 366), was rebuilt by Cromwell, Lord High Treasurer to Henry VI, but may be regarded as an early Tudor building. It is surrounded by a moat and consists of a keep (p. 366 H, L) about 112 ft. high, of excellent brickwork with octagonal angle turrets, and is a remarkable reversion to the Norman form of keep which had been discarded as inconvenient. The upper storey overhangs, and is provided with machicolations. The interior is of four storeys, reached by turret stairs, and on each floor is a large chamber with several smaller ones, and it is believed that the ground storey formed the entrance hall, the first storey the reception hall, and the upper storeys contained bedrooms. The castle possesses some fine chimney-pieces (p. 366 G, J), with carved heraldic devices, which, by the public spirit of Lord Curzon of Kedleston, have been here preserved for the nation.

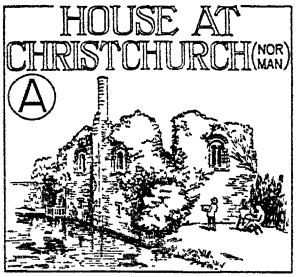
Other examples are **Ashby-de-la-Zouch** and **Raglan Castle.**

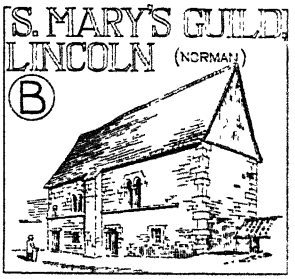
MANOR HOUSES

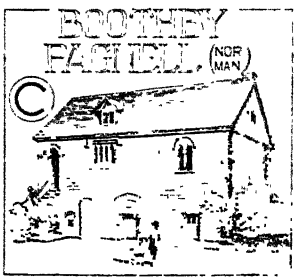
Domestic architecture in England, as distinct from military, owed little to the Roman occupation, as the uncovered atriums of the villas of the officials of Imperial Rome were found to be unsuitable for the English climate. A distinctive type of dwelling-house was therefore evolved, in which the central feature was the covered hall or house-place. Throughout the Mediæval period this hall served many uses, and in Saxon times it frequently formed the one and only room for the sleeping, eating, living, and cooking of the owner, his family, his guests, and his serfs. Such light as there was came through small windows with shutters, and the only heating was supplied by the log fire on the central hearth, the smoke from which found its way out through an opening in the roof.

Norman period.—The Norman manor house was often walled in and

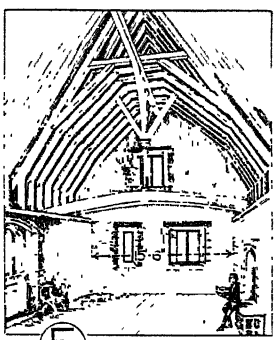
MEDIÆVAL MANOR HOUSES



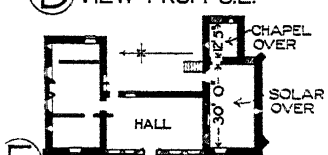


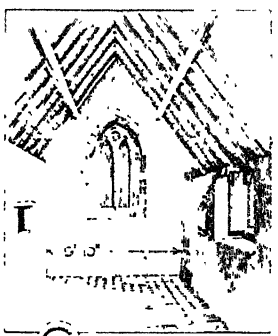


CHARNEY-BASSET : BERKS (EARLY ENGLISH)

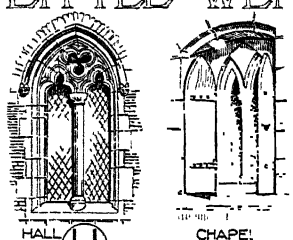


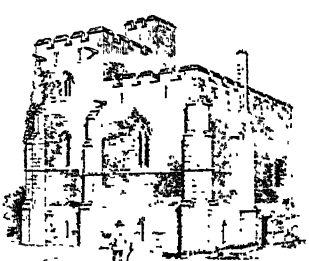




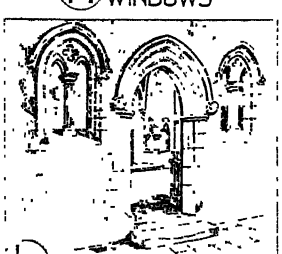


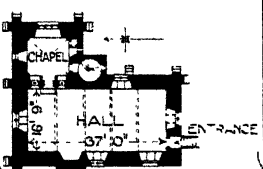
LITTLE WENHAM HALL : SUFFOLK (EARLY ENGLISH)





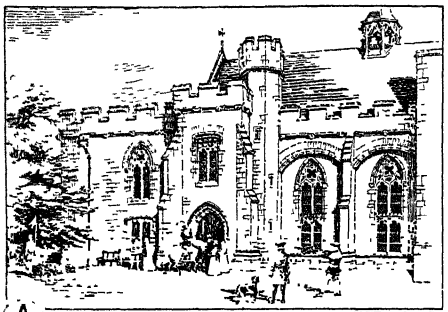




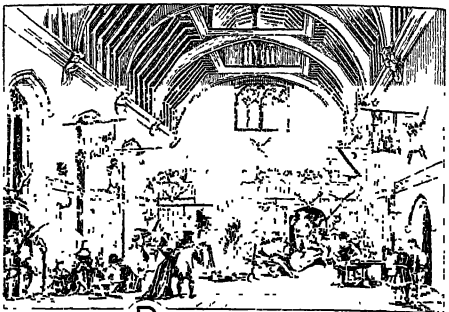




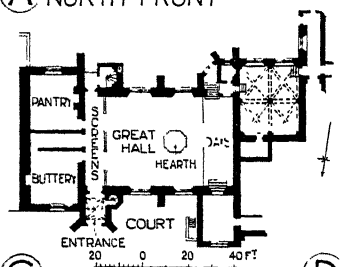
PENSHURST PLACE: KENT.



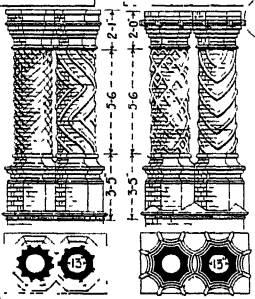
A NORTH FRONT



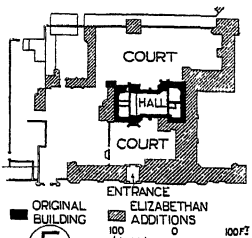
B INTERIOR OF GREAT HALL



C GROUND PLAN



D DETAIL OF CHIMNEYS



E BLOCK PLAN

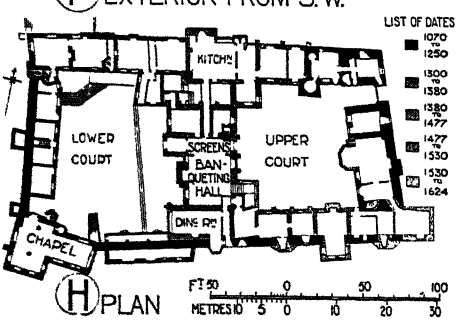
HADDON HALL: DERBYSHIRE.



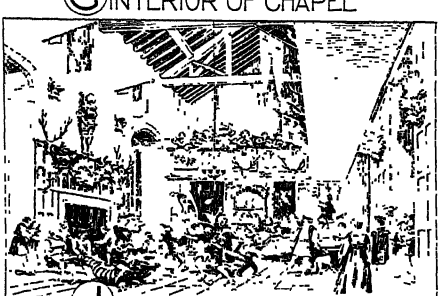
F EXTERIOR FROM S.W.



G INTERIOR OF CHAPEL



H PLAN



J BANQUETING HALL

GREAT CHALFIELD: WILTSHIRE



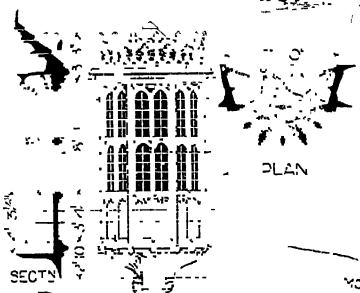
A OPENINGS IN HALL



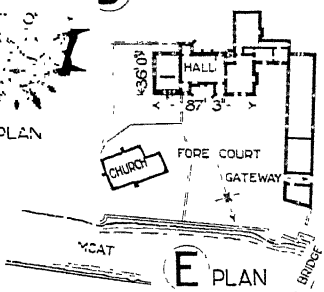
B VIEW FROM N



C FINIAL TO SMALL GABLES



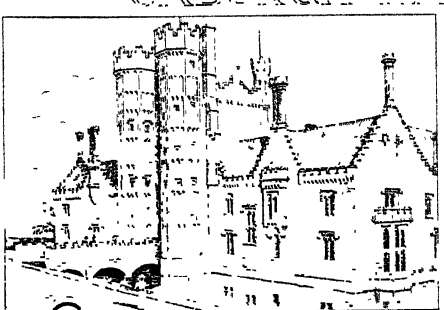
D ORIEL WINDOW



E PLAN



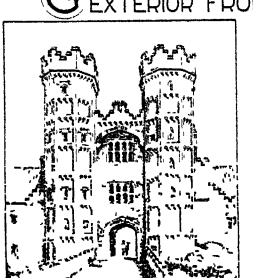
F INTERIOR OF HALL



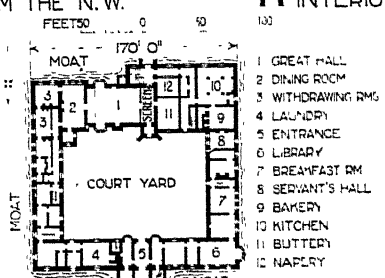
G EXTERIOR FROM THE N.W.



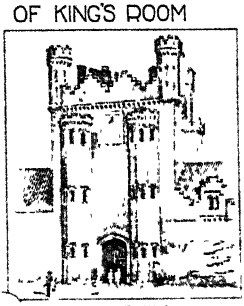
H INTERIOR OF KING'S ROOM



J THE GATEWAY WITH BRIDGE ACROSS MOAT



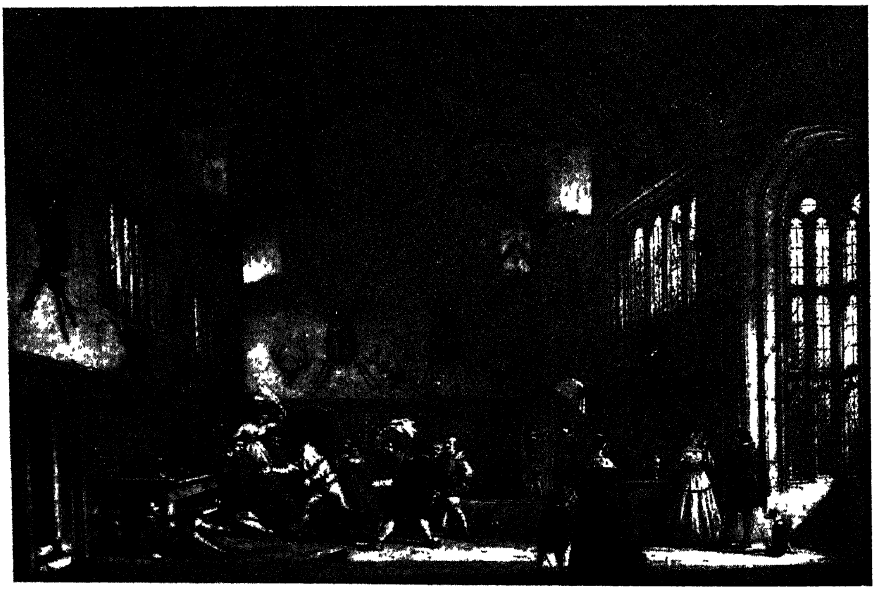
K GROUND PLAN



L THE GATEWAY FROM COURT



A. ATHELHAMPTON, DORSET



B. ATHELHAMPTON, DORSET : THE HALL

moated, and consisted of the great common hall with the private " solar " at one end and kitchens at the other. This was the germ of all future house plans, with their many and various additions. **Boothby Pagnell, Lincs.** (p. 369 C), **S. Mary's Guild, Lincoln** (p. 369 B), and the **Norman house, Christchurch, Hants** (p. 369 A), date from this period, but little domestic architecture remains from this remote time, as it was not protected by its sanctity, as were churches, or by the strength of its defences, as were castles.

Early English.—During the thirteenth century development took the form of an increase in the number of rooms, and improvement in the planning, especially in those manor houses which were the residences of royalty. We now first hear of the buttery, pantry, larder, wardrobe, and oratory, but these became more general in the fourteenth century. These more commodious houses were gradually supplanting the inconvenient keeps ; but it was still necessary to retain some defensive character, and many licences to " crenellate " or fortify manor houses were granted by Henry III. The hall with its rush-strewn floor and rude trestle furniture still remained the principal living-room and general dormitory. Glass slowly began to take the place of wooden shutters, though it was still an expensive foreign luxury.

Charney-Basset Manor House, Berkshire (A.D. 1270) (p. 369), consisted of a hall and two transverse wings, but has been much altered. The southern wing still retains, on the first floor, a small chapel containing a piscina and two-light east window. The solar adjoining the chapel, and reached by steps from the court, still has its original roof of tie-beam, king-post, and struts (p. 369 E).

Little Wenham Hall, Suffolk (p. 369), is a brick structure dating from the end of the thirteenth century. The plan is L-shaped, with a tower and turret-stair in the re-entering angle. The vaulted ground floor supports a hall with a timber ceiling (p. 369 K, M) on the first floor, off which is a little chapel (p. 369 N), with its entrance flanked by traceried openings (p. 369 L). Both hall and chapel have interesting pointed windows (p. 369 H).

Decorated period.—A typical manor house of the fourteenth century was generally castellated and quadrangular, with a central courtyard entered through a gatehouse, protected by a portcullis and drawbridge over a moat which enclosed the whole group of buildings. Opposite the gatehouse a porch led to the entry or vestibule, separated from the hall by a screen with two doors, while on the other side there were three doors into the kitchen and offices. The term " screens " is usually applied to the whole of this entry, over which was the minstrels' gallery, a characteristic feature of the lofty Mediæval hall, which was the whole height of the house. Beyond the daïs end of the hall were the family apartments and the chapel. The hall, which attained its greatest development in this century, was still a sleeping-room for the retainers and had its floor strewn with rushes and its walls hung with tapestry and trophies of the chase, while glazed windows were still rare. Wall fireplaces with hooded canopies were usual, although sometimes the hall still had a central hearth with fire-dogs for charcoal, wood, and turf, and a smoke " louvre " in the roof, as at Penshurst. In this great hall the Lord of the Manor held his court and administered justice, and here too, on the daïs, the family dined at the high table, while at a long table in the body of the hall his vassals took their meals. The daïs sometimes had a lofty bay-window which gave additional dignity to this part of the hall. Of the three doorways in the " screens " on the side away from the hall, the central one generally opened into the kitchen, one into the buttery (Fr. *bouteille* = bottle, from which the word butler, i.e. bottler, is derived), and the other

into the pantry (Fr. *pain* = bread), where butter, cheese, and bread, as well as platters and salt-cellars, were kept. The larder (*lardarium*), in which the meats were larded or preserved, was an important adjunct and formed a store-room. The old " solar," which now became known as the withdrawing-room, was frequently on an upper floor, and here from a spy-hole the master could survey the hall below (p. 371 A, F). A lady's bower and additional bedrooms indicate an increased desire for privacy. The chapel had a gallery for the master and his family, while the retainers were on the floor below. A small priest's chamber was sometimes added, as at Broughton Castle, Oxfordshire (p. 367). The kitchen of the Bishop's Palace, Chichester, the monastic kitchen at Durham, and the Abbot's Kitchen at Glastonbury give an idea of the culinary arrangements of the period.

Penshurst Place, Kent (A.D. 1388) (p. 370), is a typical, well-preserved manor house, in which the distinctive features may be seen. The fine hall (64 ft. by 39 ft. and 48 ft. high) has the usual screen at one end and daïs at the other (p. 370 B), and its central hearth still exists, while in the open timber roof was a " louvre " for the smoke (p. 370 A). The original arrangements of dwelling and service rooms have been supplemented in Elizabethan and modern times.

Other well-known examples are **Ightham Mote**, Kent ; **Sutton Courtenay**, Berks (p. 409 C), and **Prior Crauden's House, Ely** ; while the **Hall of Westminster Palace**, with its traceried windows and magnificent roof (recently restored), rivals any ecclesiastical building of the period (p. 409).

Perpendicular period.—In spite of the Wars of the Roses, the fifteenth century witnessed an improvement in social conditions and commercial prosperity. This was duly reflected in the architecture of manor houses by further provision for domestic comfort. The hall, with fine bay-window, canopied fireplace, and open timber roof, continued to be the principal feature ; furniture was still scanty, trestle tables were in use, and the floor was only covered with rushes or matting. The withdrawing-room and lady's bower were now used only as sitting-rooms, while bedrooms increased in number, and the hall ceased to be the general dormitory. The kitchens at Stanton Harcourt, Oxon, and New College, Oxford, show the importance frequently given to this department, to which, besides buttery, pantry, and larder, were now added a scullery, bakehouse, brewhouse, and dairy, while corn mills, granaries, and stables became more numerous. **Wolterton Manor House, East Barsham**, Norfolk, of which the main building is on the usual plan, has a fine detached gatehouse.

Great Chalfield Manor House, Wilts. (about A.D. 1450) (p. 371), is a singularly picturesque example, though much restored. It is almost surrounded by a moat and forms part of a group of church, house, and stables, approached across the bridge and under the gateway which leads into the forecourt. It had no fortifications, as it stood in the peaceful county of Wiltshire. The groined two-storeyed porch leads through the screens to a typical hall (about 36 ft. by 20 ft. 6 in. and 20 ft. high) with bay-window and panelled ceiling of wood and plaster (p. 371 F). There are also curious masked openings (p. 371 A, B) through which those in the upper chambers at either end could look down into the hall ; and west of the screens are the kitchen and offices. The façade has two oriel windows (p. 371 B, D), and gables with fine carved finials (p. 371 C). This delightful group, somewhat resembling that at South Wraxall, is typical of the homeliness of English manor houses.



A. Bramhall Hall, Cheshire: The Hall

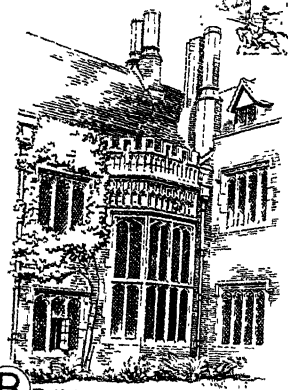


B. Speke Hall, Lancs.: Garden Front

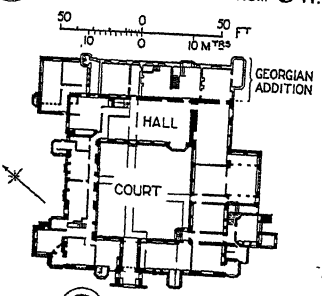
COMPTON WYNYATES
WARWICKSHIRE



A GENERAL VIEW FROM S.W.



B BAY WINDOW IN COURT



C PLAN



D KEEP & CHAPEL FROM E.

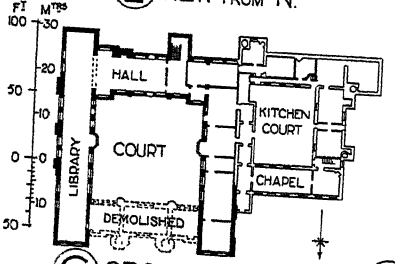
SUTTON PLACE : SURREY



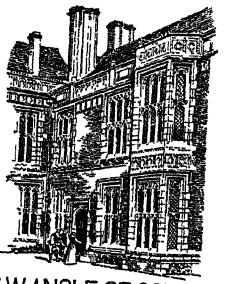
E VIEW FROM N.



F INTERIOR OF BAY

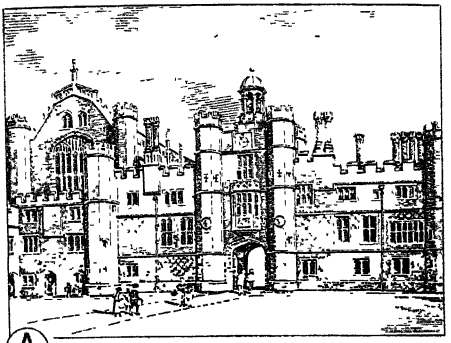


G GROUND PLAN

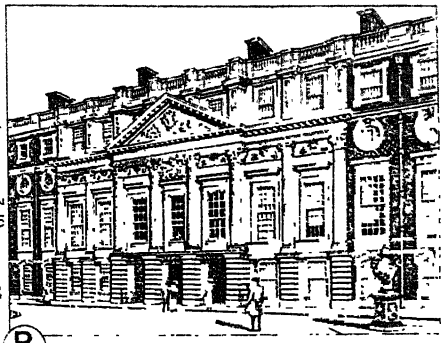


H S.W. ANGLE OF COURT

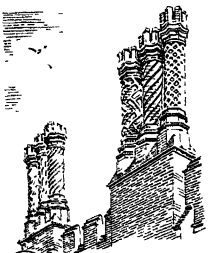
HAMPTON COURT PALACE



A ENTRANCE TO CLOCK COURT (WOLSEY)



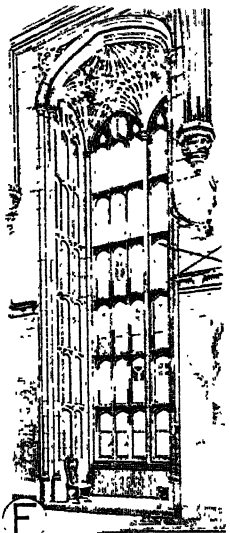
B EAST FACADE (SIR CHRISTOPHER WREN)



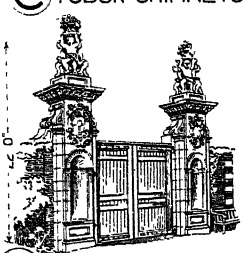
C TUDOR CHIMNEYS



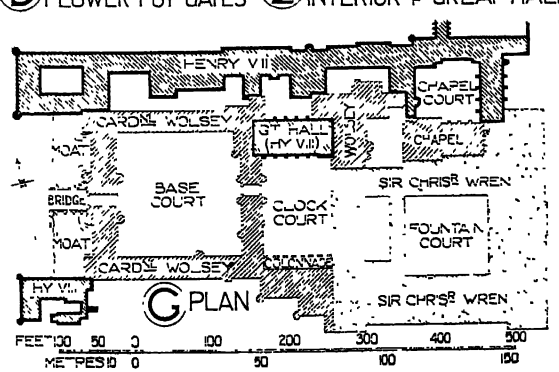
E INTERIOR OF GREAT HALL (HENRY VIII)



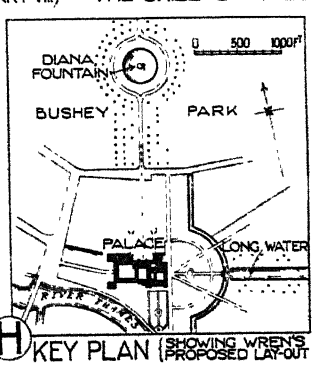
F THE ORIEL: GT HALL



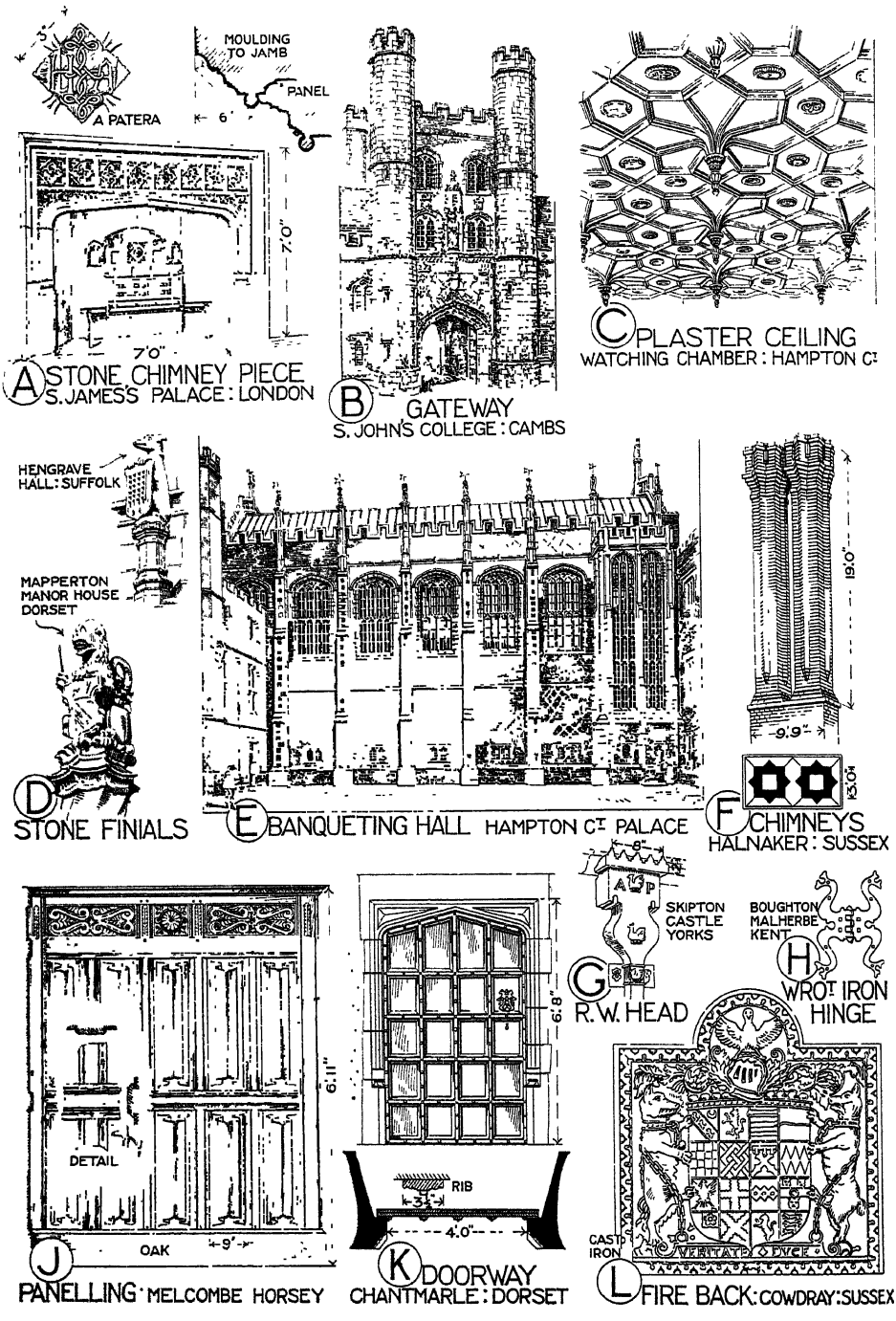
D FLOWER-POT GATES



G PLAN



H KEY PLAN (SHOWING WREN'S PROPOSED LAY-OUT


A PATERA
MOULDING TO JAMB
PANEL
6"
7'0"
7'0"
A STONE CHIMNEY PIECE
S. JAMES'S PALACE : LONDON
B GATEWAY
S. JOHN'S COLLEGE : CAMBS
C PLASTER CEILING
WATCHING CHAMBER : HAMPTON Ct
HENGRAVE HALL : SUFFOLK
MAPPERTON MANOR HOUSE DORSET
D STONE FINIALS
E BANQUETING HALL HAMPTON Ct PALACE
19'0"
9'9"
15'0"
F CHIMNEYS
HALNAKER : SUSSEX
A P
SKIPTON CASTLE YORKS
G R.W. HEAD
BOUGHTON MALHERBE KENT
H WROT IRON HINGE
DETAIL
6'11"
OAK
4'9"
J PANELLING · MELCOMBE HORSEY
6'8"
RIB
3½"
4'0"
K DOORWAY
CHANTMARLE : DORSET
CAST IRON
VERITAS
DVCE
L FIRE BACK : COWDRAY : SUSSEX

Oxburgh Hall, Norfolk (A.D. 1482) (p. 371), is a fine specimen of brickwork, but it has been partly restored. The plan is quadrangular, with buildings round a court surrounded by a moat. The magnificent brick gatehouse is flanked by towers, seven storeys high, and is reached across a bridge which spans the moat, and leads to a courtyard and on to the great hall through the usual screens. The King's Room (p. 371 H) in the gateway tower is said to have been occupied by Henry VII in A.D. 1487.

Haddon Hall, Derbyshire (p. 370), nestling on a hill-side amidst pastoral scenery, is famous both from historical associations and architectural interest. Dating from the Norman period onwards, its plan (p. 370 H) somewhat resembles an Oxford or Cambridge college (p. 384), for the banqueting-hall, of the fourteenth century, is between the two courts, while the long gallery, south of the upper court, is Elizabethan (p. 708). The stepped entrance in the north-west angle is in an unusual position, with no driving way, and reminds us that in the Mediæval period riding on horseback was a usual mode of travelling, but a carriage entrance leads into the upper court. The banqueting-hall, with its fine windows, great fireplace, and open timber roof, together with the long gallery and the severe and simple chapel, give one a good idea of this stately, semi-fortified manor house amid its balustraded terraces and raised gardens.

Hever Castle, Kent, **South Wraxall Manor House,** Wiltshire (A.D. 1440), and **Ockwells,** near Windsor, show the gradual change from the older fortified type to the later, comfortable dwelling-house. The **Bishop's Palace, Wells,** though a semi-ecclesiastical building, has a fortified wall with gate-house and moat, while the old **Archbishop's Palace, Croydon,** still retains its fine timber roof. **Cothay Manor House,** Somerset (A.D. 1480), is an unspoilt gem among small houses of the period.

Tudor period.—Manor houses of the first half of the sixteenth century were principally erected by new and wealthy trading families, who were taking the place of the old nobility, while the suppression of monasteries by Henry VIII provided him with both money and lands with which to enrich his favourites, who vied with one another in the building of fine houses. The Tudor house, with its increased number and variety of rooms, was usually still built round a quadrangular court from which many rooms were entered direct. Under the changed conditions such features as battlemented parapets and fortified gateways were retained for ornament rather than defence, while the addition of numerous ornamented chimneys is evidence of the increased comfort within (p. 376 A). The entrance to the quadrangle was under a gate-house, opposite which on the other side of the court was the porch leading to the " screens " of the great hall, which now definitely declined in importance, owing to the addition of other rooms, and also to the reduction by legal enactments of military retainers. The hall, however, still remained a feature on which much artistic skill was lavished, and this is seen especially in the richly carved wall fireplace, oak-panelled walls, and timber roof, while the furniture, which became more plentiful, followed, as in previous periods, the architectural style (p. 428 D, E, F, M). We now first hear of such additional rooms as the study, summer and winter parlours, and private dining-rooms ; while bedrooms, though often only " thoroughfare " rooms, were increased. **Hengrave Hall,** Suffolk (A.D. 1538), had no fewer than forty bedrooms, and an inventory of this building includes, besides kitchen offices, pastry-room, laundry, linen-room, and still-rooms, in addition to those of the previous period. Gardens were now laid out on definite architectural plans to form

fitting frames for the houses, with paved alleys, yew hedges, stone steps, and balustraded terraces.

Athelhampton Hall, Dorset (p. 372), is a very fine Tudor structure, dating from the reign of Henry VII, and its notable features are the gatehouse (with oriel window), since destroyed, the beautiful octagonal bay-window of the hall, and the projecting porch, with its pointed archway. The hall (p. 372 B), which measures about 38 ft. by 22 ft., is of the usual type, with bay-window, panelled walls, and timber roof.

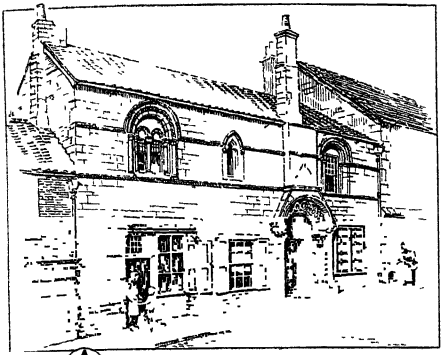
Bramhall Hall, Cheshire (p. 375A), commenced in the reign of Henry VIII, is one of the many half-timber houses of Cheshire. Its bay-window is characteristic, but the hall (36 ft. by 26 ft.) is somewhat peculiar in being only 12 ft. high, and in having no minstrels' gallery. It has some beautiful leaded glass, but the pendant plaster ceiling no longer exists.

Speke Hall, Lancashire (p. 375 B), is one of the best-preserved half-timber houses so characteristic of this part of England, and owes its charm to the disposition of the timbers, the quatrefoil filling, and the carved barge-boards and finials, which are in marked contrast to the style of brick and stone buildings.

Compton Wynyates, Warwickshire (A.D. 1520) (p. 376), one of the finest of Tudor mansions, was completed by Sir William Compton, a London merchant and favourite of Henry VIII. The entrance, under a low square battlemented tower, has a four-centred archway, surmounted by a three-light mullioned window. Opposite the entrance, on the other side of the court, are the screens, with the minstrels' gallery over, and from these access is obtained to the buttery and kitchens, and to the hall with its bay-window (p. 376 B). South of the court are the drawing-room and chapel, while numerous turret stairs communicate with upper rooms. East of the hall are the eighteenth-century additions. The exterior shows a charming mingling of red brick, stone, and half-timber work, to which time has given beautiful and varied tints.

Hampton Court Palace (pp. 377, 378 E) is one of the most remarkable and interesting domestic buildings in this country, and much of it (p. 377 G) remains as built by Cardinal Wolsey (A.D. 1515–30). Fitted with gorgeous furniture and tapestries, the palace seems to have excited so much royal envy that the Cardinal made it over to Henry VIII, who added north and south wings (A.D. 1532–36), but the eastern portion was pulled down by Sir Christopher Wren and rebuilt in the Renaissance style (p. 726). The Palace has a delightful position on Thames-side (p. 377 H), with the grand avenue through Bushey Park intended by Wren as an approach to the great hall, while on the east are the radiating avenues and Long Water. The original part of the palace is of mellow red brickwork, in diaper pattern, with battlemented parapets. The smaller courts and the Tudor chimneys (p. 377 C) well exemplify the beauty of brick architecture in the time of Wolsey. Its ancient walls are invested with the glamour of kings and queens, poets and scholars, courtiers and ecclesiastics; they testify to the vanished pomp and glory of bygone ages. Entering by the Trophy Gates on the west, we pass through an outer court on to the bridge, over the ancient moat which surrounded the palace, and on through the great gatehouse, with angle turrets, oriel window, and terra-cotta medallions of Roman emperors obtained by Wolsey from the sculptor Majano (p. 312). Underneath the gateway to the Clock Court (p. 377 A) steps lead to the great hall of Henry VIII (106 ft. by 40 ft., and 60 ft. high) (p. 377 E), entered as usual through screens. Its walls

THE SMALLER HOMES



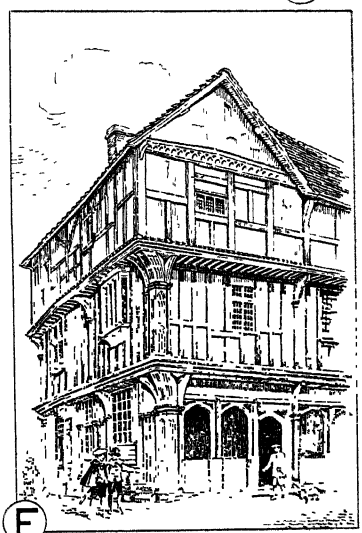
A THE JEWS' HOUSE: LINCOLN



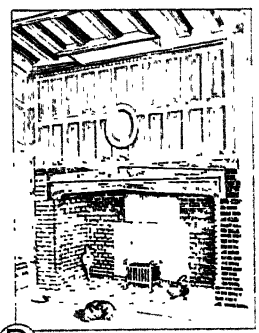
B CHIDDINGSTONE·KENT



C TONBRIDGE



F BUTCHERS' ROW: SHREWSBURY



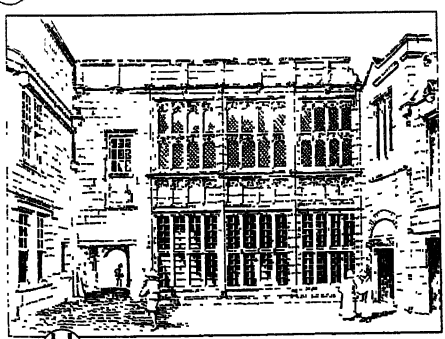
D COGGESHALL: ESSEX



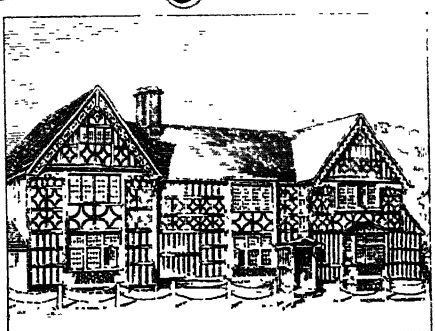
E FINCHINGFIELD: ESSEX



G BLETCHINGLEY·SURREY



H COLSTON'S HOUSE: BRISTOL: GLOS.

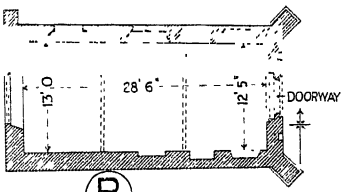


J THE MIDDLE HOUSE: MAYFIELD: SUSSEX

CHAPEL: HOUGHTON-LE-DALE

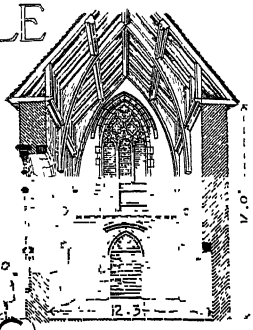


A EXTERIOR



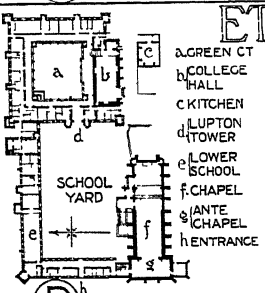
B PLAN

10 5 0 10 20 FT
1 0 1 2 3 4 5 6 MTRS



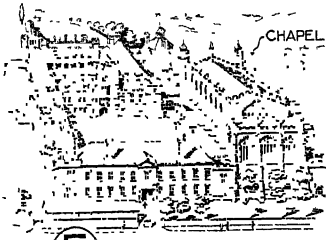
C INTERIOR LOOKING E.

ETON COLL. CHAPEL

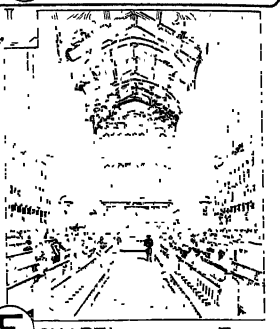


D PLAN

50 0 50 100 150 200 FT

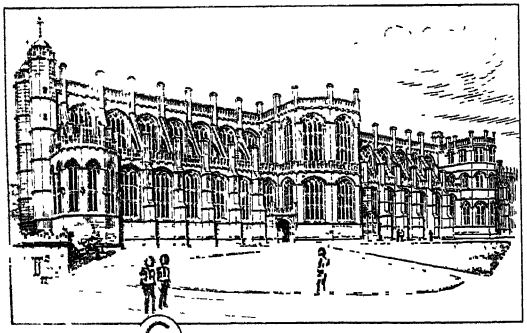


E VIEW OF COLLEGE

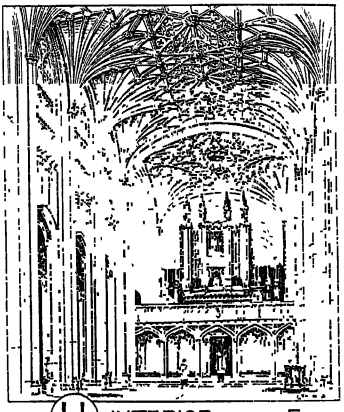


F CHAPEL LOOKING E.

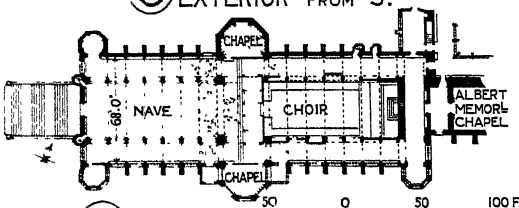
S. GEORGE'S CHAPEL: WINDSOR



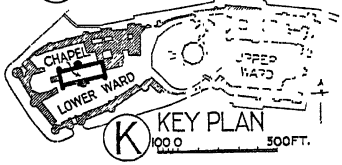
G EXTERIOR FROM S.



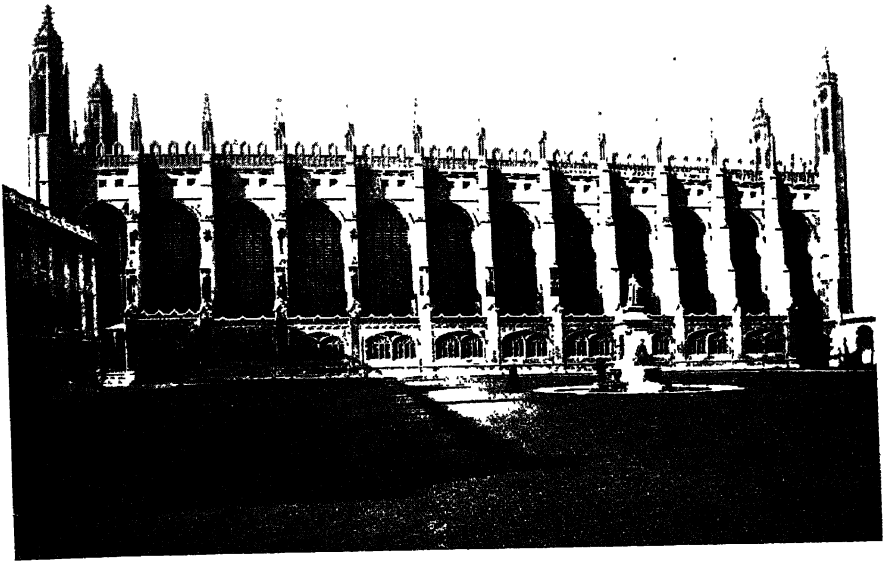
H INTERIOR LOOKING E.



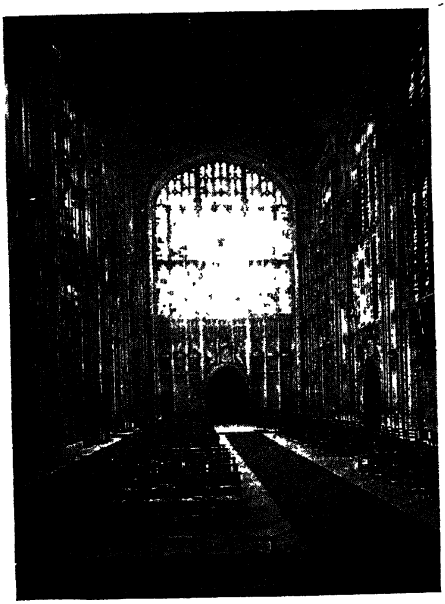
J PLAN



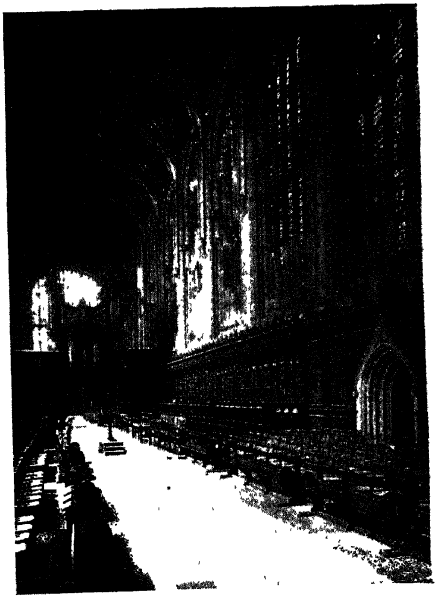
K KEY PLAN



A. KING'S COLLEGE CHAPEL, CAMBRIDGE

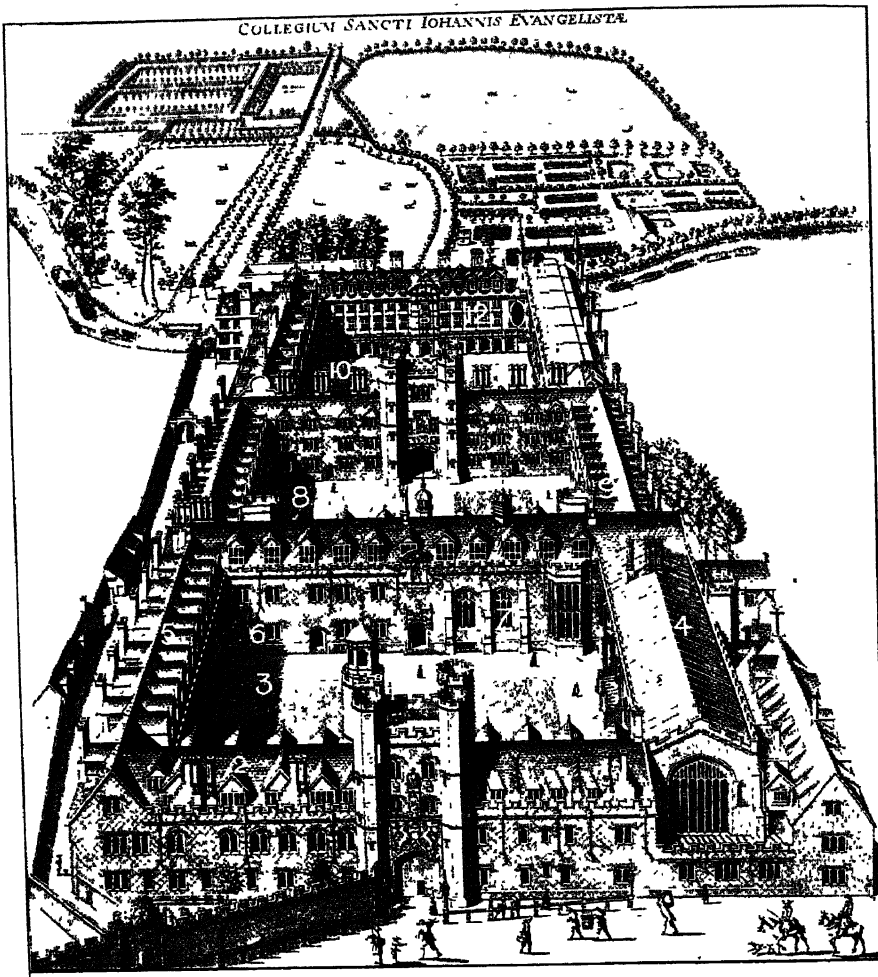


B. ANTE-CHAPEL LOOKING W.



C. CHOIR LOOKING W.

KING'S COLLEGE CHAPEL, CAMBRIDGE



S. JOHN'S COLLEGE, CAMBRIDGE, FROM E.

1. ENTRANCE GATEWAY
2. LIBRARY
3. FIRST COURT
4. CHAPEL
5. CHAMBERS
6. KITCHEN
7. HALL
8. SECOND COURT
9. MASTER'S LODGE
10. THIRD COURT
11. LIBRARY
12. LOGGIA

are hung with tapestry, and the hammer-beam roof is one of the richest of its type. This hall still retains its daïs, and an oriel window (p. 377 F) which forms a great feature of the exterior of the hall seen from the Clock Court (p. 378 E), so called from a curious astronomical clock over one of its gateways. To the east of the great hall is the so-called Watching Chamber, with its plaster ceiling (p. 378 C), and still farther east is the Tudor chapel with linen-fold panelling, Renaissance altar-piece, and coloured pendant roof. The famous Fountain Court, surrounded by cloisters, and the Ionic colonnade (A.D. 1690) in the Clock Court are striking and restrained examples of the art of Sir Christopher Wren, and near the latter a grand staircase leads to the state rooms (now the picture galleries) in the east façade (p. 377 B). On the south of the palace, extending down to Thames-side, are the Privy Garden, with its handsome iron gates by Tijou, and the Pond Garden, and to the north is the wilderness, near the famous Lion Gates. Since the time of George II, Hampton Court has ceased to be a royal residence, but comprises suites of rooms for fortunate pensioners of the Crown.

Sutton Place, Guildford (A.D. 1523–25) (p. 376), was built by Sir Richard Weston, a trusted counsellor of Henry VIII. The plan was quadrangular, formerly entered through a central gateway which has been demolished. The entrance to the great hall, placed centrally on the axis of the former gateway, is an early instance of a desire for symmetry as opposed to convenience, and is flanked by bay windows in the corner of the façade. The terra-cotta work shows the influence of Italian Renaissance, as in the delicate flowering in the hollows of the mullions.

Other typical examples are **Layer Marney Towers,** Essex (c. A.D. 1500–25) (p. 312), **Horham Hall,** Essex (A.D. 1502–20), **Barrington Court,** Somerset (A.D. 1514–48), and **Little Moreton Hall,** Cheshire (A.D. 1550–59) (p. 699A), with its long gallery, 75 ft. by 12 ft. 6 ins., sometimes regarded as an early Renaissance building.

Elizabethan mansions of the latter half of the sixteenth century, though incorporating new features, are based on Tudor models (pp. 701, 708).

SMALLER HOMES

The feudal system provided quarters for vassals and retainers within the castle walls, and in a similar manner monastic communities lodged their dependents and labourers in various conventual buildings, and both these great Mediæval institutions not only housed their dependents, but also protected them against marauders and outlaws. As population increased and conditions changed, more accommodation was required, and, nestling close under the protecting walls of the castles, primitive dwellings were erected to meet the simple requirements of an unexacting age, and as commerce expanded these tenements increased in number and were formed into thriving trading towns. Townships also grew up round the wealthy monasteries which formed refuges in case of danger, and these rising communities waxed strong enough to enter into conflict with the monastic authorities under whose protection they had developed. In some of these new towns the interests of the feudal lord conflicted with those of the mitred abbot, and this resulted in divided allegiance, as in Rochester, which is an instance of a town which grew up under both castle and monastery. The origin of these towns, with their consequent lack of municipal freedom, is accountable for the absence of town halls which are such characteristic buildings of the period in the free towns

of Belgium, Italy, and Germany. A typical house of the townsman consisted of a shop opening on the street, and there he plied his craft or sold his wares, and behind was the kitchen and stair to the sleeping-rooms above. The character of the buildings depended on local conditions and the materials at hand. Thus in stone districts the houses are solid and substantial, and the **Jew's House, Lincoln** (p. 381 A), is a splendid relic which has come down from Norman times. In the clay lowlands of East Anglia the local brick gives colour and warmth to many a Mediæval building. In districts where timber was plentiful, half-timber houses were common, and the interesting group of **Mediæval Houses, Chiddingstone** (p. 381 B), **Butcher's Row, Shrewsbury** (p. 381 F), and a **House at Tonbridge** (p. 381 C) give a good idea of the black and white blending of beam and plaster, while **Colston's House, Bristol** (p. 381 H), forms another interesting type. There are also many smaller houses which date back to Tudor times, such as those at **Finchingfield, Bletchingley, Mayfield** (p. 381 E, G, J), and **Coggeshall** with its wide open fireplace (p. 381 D).

In the country, besides castles and manor houses of the nobility and gentry, there were the homesteads of small free-holders or yeomen of the Middle Ages, which were based, as far as means would allow, upon the manor-house model of general living-room with kitchen at one end and private rooms at the other. The homes of the peasants, of which few remain, were more primitive and often had only one room, which met the requirements of those who had previously been lodged in castle or monastery buildings. It was not till after the Reformation that the change in the ownership of land gave an impetus to agriculture, and so to the building of labourers' cottages.

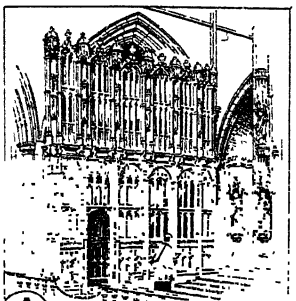
CHAPELS

Chapels varied in treatment according to the type of building to which they were attached and the special purpose for which they were erected, but a nave, to which aisles were sometimes added, was common to all. Some were attached to royal castles, as **S. John's Chapel** (Tower of London) (p. 364 C, D, E) ; to royal palaces, as **S. Stephen's Chapel, Westminster** (A.D. 1349–64) (p. 459 C) ; to manor houses, as **Compton Wynyates** (p. 376) ; to colleges, such as **Merton College, Oxford** (A.D. 1274), and **King's College, Cambridge** (A.D. 1446–1515) (p 383) ; to schools, as **Eton College** (p. 382) ; to ecclesiastical palaces, as **Lambeth Palace** (A.D. 1250) ; or to bridges, as at **Wakefield** (fourteenth century) ; while others were specially designed as mortuary or sepulchral chapels, such as **S. George's Chapel, Windsor** (A.D. 1473–1537) (p. 382) ; the **Chapel of Henry VII, Westminster** (A.D. 1502–12) (pp. 353, 358), or mortuary chapels of noble families, such as the **Beauchamp Chapel, Warwick** (A.D. 1443–64), which, in its general idea, suggests the Chapel of Henry VII. The **Pilgrim's Chapel, Houghton-le-Dale,** Norfolk (A.D. 1350) (p. 382), is a complete example.

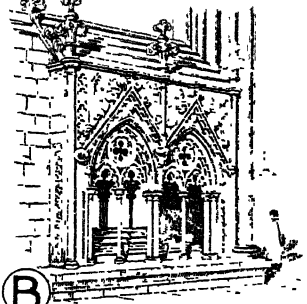
Lady Chapels in most of our English cathedrals form a church within a church, as at York, Winchester, Salisbury (p. 332 B, C, E), Worcester, Gloucester (p. 333 A, C), Exeter, S. Albans, Chichester (p. 334 E, F, G), Chester, Lichfield, and Bristol (p. 335 F, J, K). The Chapel of the Nine Altars, Durham (p. 333 E), and at Fountains Abbey (p. 359), and the Trinity Chapel and "Becket's Crown," Canterbury (p. 333 B), are unusual eastern terminations, due to special circumstances.

Chantry Chapels were frequently endowed, previous to the Reformation,

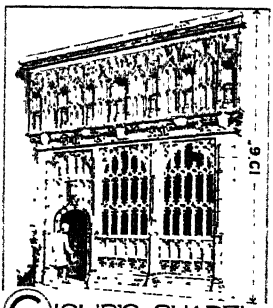
CHANTRIES SHRINES & TOMBS



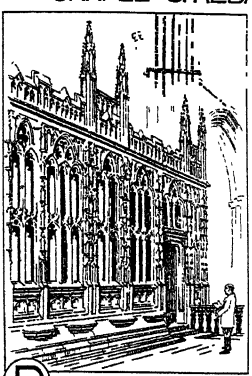
A RAMRYGE CHANTRY CHAPEL: S. ALBANS



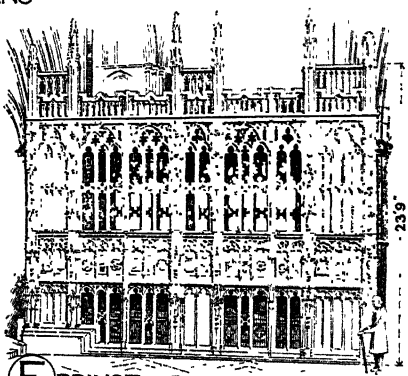
B BISHOP BRIDPORT'S TOMB: SALIS^{Y}



C ISLIP'S CHAPEL WESTMINSTER



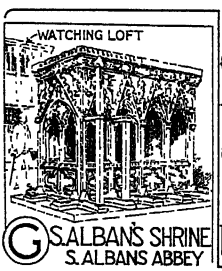
D SANCTUARY SIDE



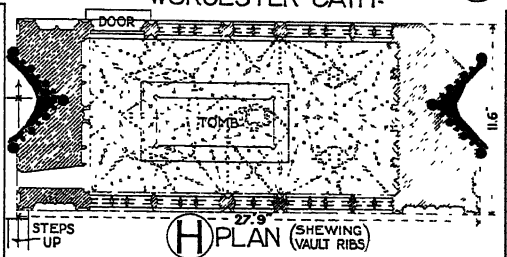
E PRINCE ARTHUR'S CHANTRY WORCESTER CATH^{L}



F INTERIOR LOOKING E.



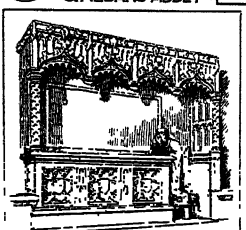
G S. ALBAN'S SHRINE S. ALBANS ABBEY



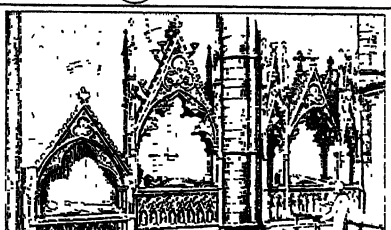
H PLAN



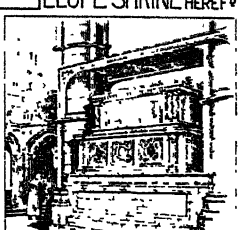
J S. THO^{S} DE CANTELUPE SHRINE HEREF^{D}



K CHAUCER'S TOMB WESTMINSTER ABBEY

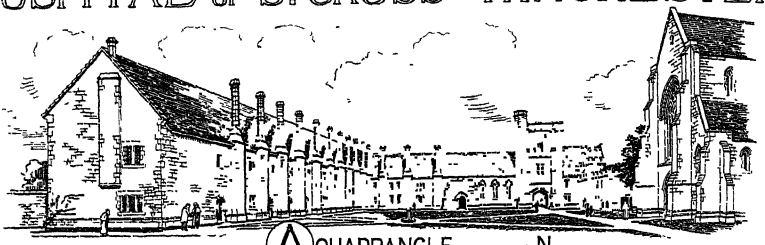


L TOMBS IN SANCTUARY: WESTM^{STR}



M HENRY III'S TOMB WESTMINSTER ABBEY

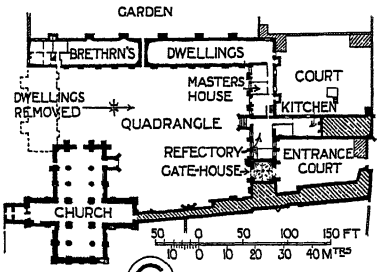
HOSPITAL OF S. CROSS: WINCHESTER



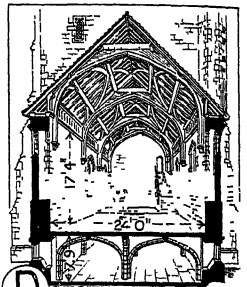
A QUADRANGLE LOOKING N.



B CHURCH FROM N.E.

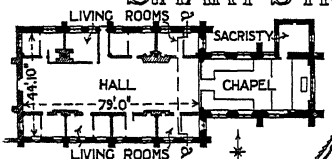


C PLAN



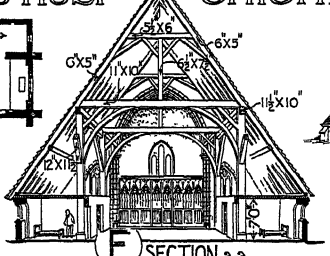
D SECT^N THRO REFECTORY

S. MARY'S HOSP^L CHICHESTER



E PLAN

SCALE FOR PLAN
10 0 10 20 30 40 50 FT
5 0 5 10 15M TRS



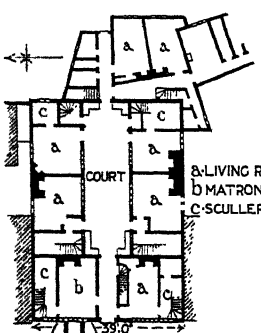
F SECTION a-a



G VIEW FROM S.E.

SCALE FOR SECTION
10 5 0 10 20 30FT
1 0 3 6 9M TRS

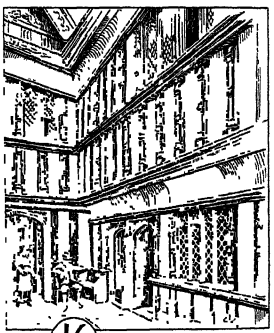
FORD'S HOSPITAL: COVENTRY



H PLAN

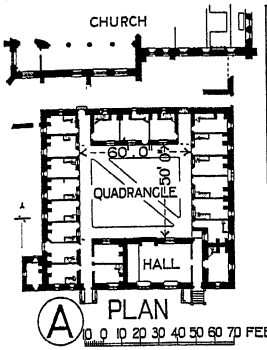


J EXTERIOR

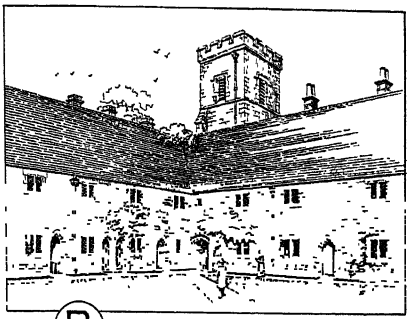


K THE COURT

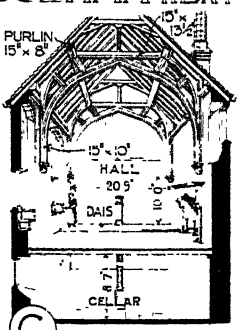
ALMSHOUSES (PRIESTS' COLL.): COBHAM: KENT



A PLAN

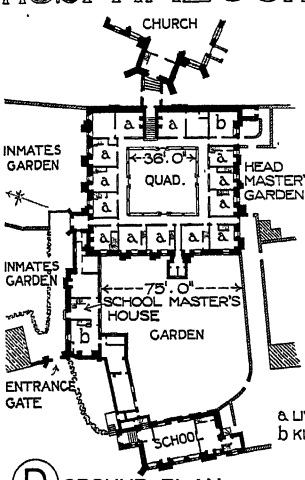


B QUADRANGLE FROM S.E.

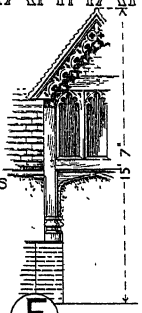


C HALL LOOKING W.

HOSPITAL & GRAMMAR SCHOOL: EWELME: OXON.



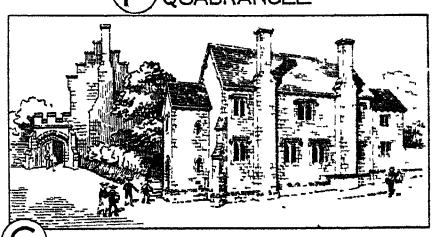
D GROUND PLAN



E PORCH



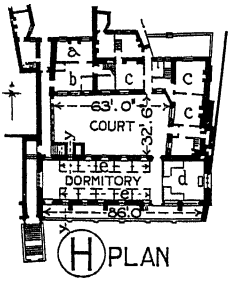
F QUADRANGLE



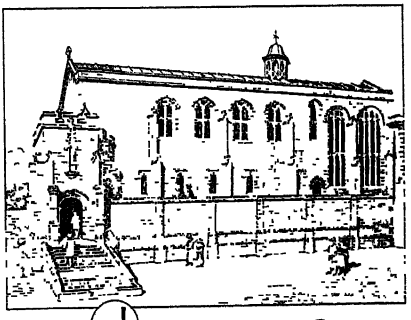
G ENTRANCE GATE & SCHOOL FROM N.W.

BEDE HOUSE (BROWNE'S HOSPL) STAMFORD: LINCS.

a HALL
b NURSES' KITCHEN
c WARDEN'S HOUSE
d CHAPEL
e CUBICLES



H PLAN

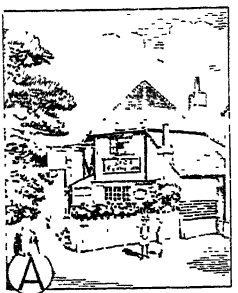


J EXTERIOR FROM S.

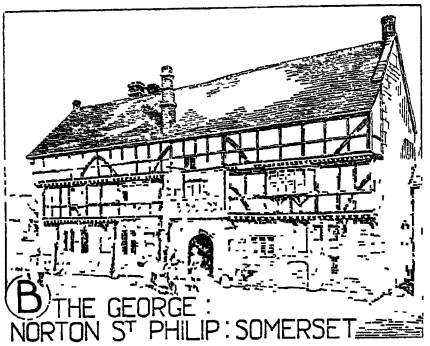


K SECTION y.y

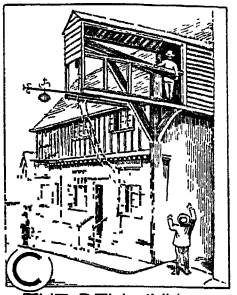
MEDIÆVAL INNS



A THE FIGHTING COCKS: S. ALBANS: HERTS



B THE GEORGE: NORTON ST PHILIP: SOMERSET



C THE BELL INN: WOODBRIDGE: SUFFK.



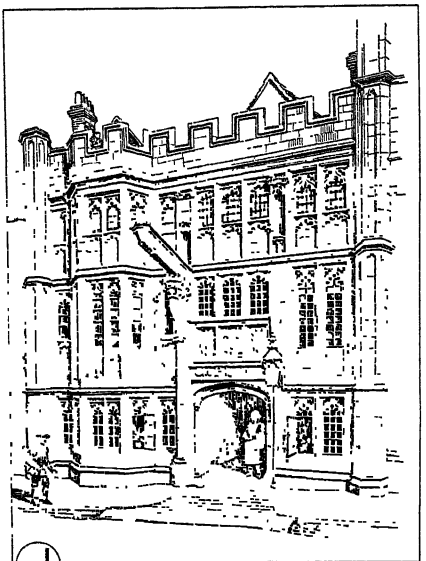
D THE ANCHOR INN, RIPLEY: SURREY



F THE SIX BELLS HOLLINGBOURNE



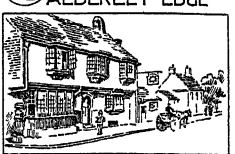
H THE KING'S HEAD: SISSINGHURST



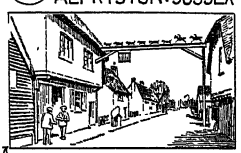
J THE GEORGE INN: GLASTONBURY



E THE EAGLE & CHILD ALDERLEY EDGE



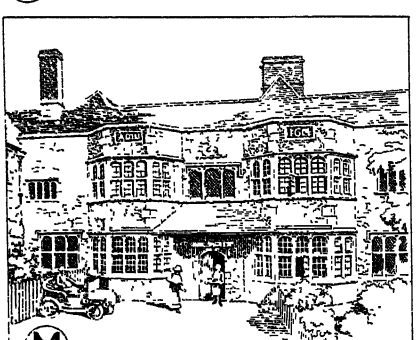
G THE STAR INN: ALFRISTON: SUSSEX



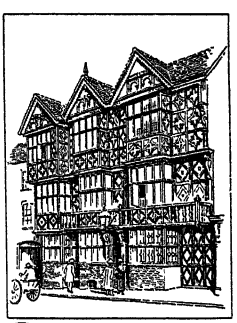
K THE FOX & HOUNDS BARLEY: HERTS



L THE FALSTAFF INN: CANTERBURY



M THE DOLPHIN INN: NORWICH



N THE FEATHERS INN: LUDLOW: SHROPS.

for the saying of masses for the souls of the pious founders and their families. These chapels were most numerous in abbeys and cathedrals where the privilege of burial could only be obtained by some beneficent offering. In English cathedrals, chantry chapels often occupied one or more bays in an aisle, and were enclosed by open screens, or were external additions to the original building, while others were independent structures within the edifice. The **Chantry Chapel, Worcester** (A.D. 1504) (p. 387), erected to Arthur, son of Henry VII, is a remarkably fine internal structure, of which the whole surface is covered, both externally and internally, with tracery, and sculptured; while the roof is a fine specimen of fan vaulting in miniature. This chapel never received the recumbent figure for which it was designed. Tewkesbury Abbey is famous for the number and richness of its chantry chapels; and among many others elsewhere are the **Ramryge Chantry Chapel, S. Albans** (c. A.D. 1520) (p. 387 A), and **Abbot Islip's Chapel, Westminster** (p. 387 C), and **Chaucer's Tomb, Westminster** (p. 387 K), with its prayer place and fine traceried canopy, seems to be a rudimentary chantry.

Shrines also figured largely in English cathedrals, such as **S. Alban's Shrine, S. Albans** (p. 387 G), and the **Shrine of S. Thomas de Cantelupe, Hereford** (p. 387 J), but many were destroyed at the Reformation.

COLLEGES

The University of Oxford appears to have been formed by English scholars from the University at Paris, and it dates from about A.D. 1167, while that of Cambridge (A.D. 1209) arose through a migration from Oxford. Colleges were similar in general equipment to monastic establishments, and were based on the plan of the Mediæval house, with hall and rooms grouped round a quadrangle; so that the colleges of Oxford and Cambridge and the Inns of Court, London, still give a good idea of the arrangement of hall, screens, and daïs, with the bay-window and timber roof, of a Mediæval manor house.

Halls of residence, or colleges, for communities of teachers and students to promote discipline and common interests date from the thirteenth century, and approximate dates of the foundation of some Colleges are appended:

Oxford: University College, A.D. 1249; Balliol, A.D. 1263; Merton, A.D. 1264; Worcester, A.D. 1289; Exeter, A.D. 1314; Oriel A.D. 1326; Queen's, A.D. 1340 (rebuilt A.D. 1692–1716) (pp. 726, 744, 744[2]); New, A.D. 1379; Lincoln. A.D. 1427; All Souls', A.D. 1437; Magdalen, A.D. 1458; Brasenose, A.D. 1509; Corpus Christi, A.D. 1516; Christ Church, A.D. 1546; Trinity, A.D. 1554; and S. John's, A.D. 1555.

Cambridge: Peterhouse, A.D. 1284; Clare, A.D. 1326; Pembroke, A.D. 1347; Gonville, A.D. 1348; Trinity Hall, A.D. 1350; Corpus Christi, A.D. 1352; King's, A.D. 1441; Queens', A.D. 1448; S. Catherine's, A.D. 1475; Jesus, A.D. 1497; Christ's, A.D. 1505; S. John's, A.D. 1511; Magdalene, A.D. 1542; and Trinity, A.D. 1546.

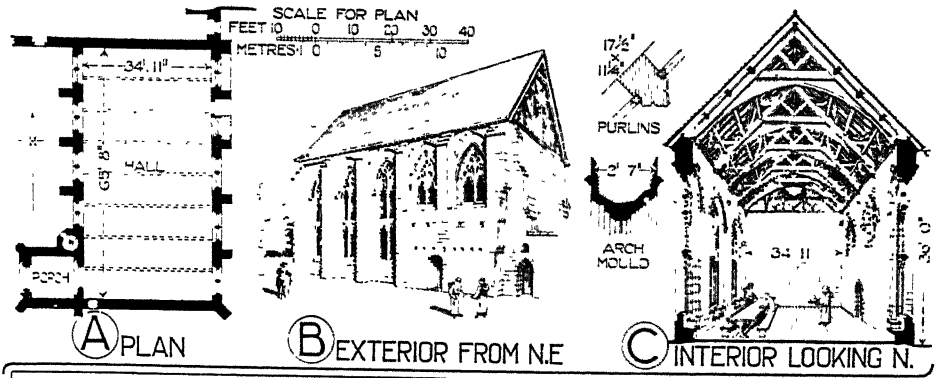
S. John's College, Cambridge (A.D. 1511) (pp. 378 B, 384), may be taken as typical of the plan of Oxford and Cambridge Colleges, though they vary in size and lay-out. The typical entrance gateway bears the arms of the founder, Lady Margaret Beaufort (mother of Henry VII), and a statue of S. John, and, with its four angle turrets, forms a fine outstanding feature of the College, which is of patterned brickwork. To the left, on the upper floor, is the library, with its pointed windows, while to the right is the chapel, since rebuilt by Sir Gilbert Scott, and forming the north side of the first court.

Immediately opposite the entrance are (on the left) the kitchen and butteries, and on the right the hall, with its pointed traceried windows, buttresses, and large bay-windows. The second court, with its time-worn plum-red bricks, and containing the Master's Lodge, was added in A.D. 1598, and from this, through a second gateway tower, is reached the third court, on the north side of which is the second library, built in A.D. 1623, and on the west side is the Renaissance loggia (A.D. 1669). The remainder of the buildings round the three courts are students' rooms, while a covered bridge from the third court crosses the river to the New Court and College grounds.

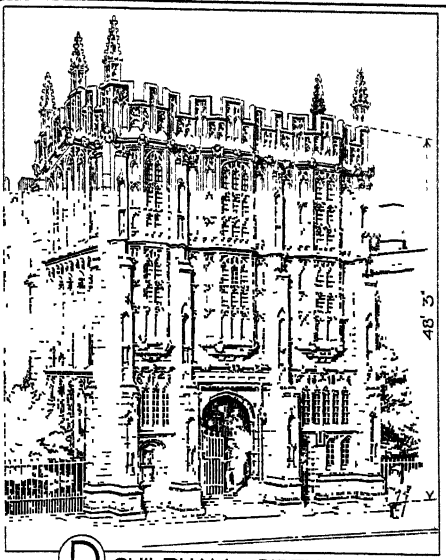
SCHOOLS

There were, according to Bede, schools in England in the seventh century, as early as there were churches, but it appears that they were not monastic in origin, though often associated with cathedrals and collegiate churches. The first were probably at Canterbury (A.D. 598), Dunwich, Rochester, and York (A.D. 630), where Alcuin (Charlemagne's educational expert), a secular clerk and not a monk, was master in the eighth century, and where later the "song" school was divided from the original "grammar" (i.e. for Latin classics) school. Then came the grammar school at Winchester, which, we are told, was attended by one of the sons of King Alfred "with other boys of gentle birth." From his time onwards there were many grammar schools attached to cathedrals, churches, hospitals, and guilds. After his conquest of the Danes (A.D. 897) more schools were founded, as at Bedford, Derby, Stafford, Bridgenorth, and Warwick, and even in A.D. 1123 the last appears to have been in continuous existence for 400 years. Even King Canute is credited with establishing schools, as at Bury S. Edmunds, while King Harold founded one at Waltham Cross. These were pre-Conquest schools. After the Conquest the secular schoolmaster or chancellor held a clearly defined position, and we find that in A.D. 1138 Henry the Schoolmaster gave teaching licences for the City of London. There were also grammar schools in towns founded by guilds—that at Louth is mentioned in A.D. 1276, that at Stratford-on-Avon in A.D. 1295, and that at Boston in A.D. 1326, and it is recorded that Thomas à Becket attended S. Paul's School in A.D. 1127. Further schools followed the increase of Colleges at the Universities; and when William of Wykeham founded New College, Oxford, he also started Winchester College (A.D. 1382) to feed it, and he there standardised the type of English public school, which was followed by Henry VI when he founded Eton (A.D. 1442). In addition to public grammar schools and monastic schools for novices, a new type of charity schools sprang up in the fourteenth century for choristers, as at Durham, Reading, Coventry, and Westminster (A.D. 1364), and the present Westminster public school was founded (A.D. 1560) on the model of other grammar schools, of which there were at least 200 before Edward VI, while there were between 300 and 400 grammar schools, free and open to all classes, in most towns by A.D. 1535. During the fourteenth and fifteenth centuries other schools were kept by priests of newly endowed chantries, as at Oswestry (A.D. 1406), Middleton (A.D. 1412), Durham (A.D. 1414), Sevenoaks (A.D. 1432), City of London (A.D. 1442), Alnwick (A.D. 1448), Hull (A.D. 1482), Chipping Campden (A.D. 1487), Macclesfield (A.D. 1502), and S. Paul's (A.D. 1509). There were also schools of hospitals, as of Ewelme (p. 397), and of S. John's Hospital, Coventry (A.D. 1545). With the reaction against the secular clergy, some schools had fallen under

THE GUESTEN HALL : WORCESTER



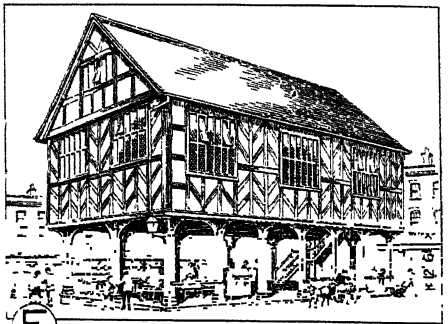
A PLAN B EXTERIOR FROM N.E C INTERIOR LOOKING N.



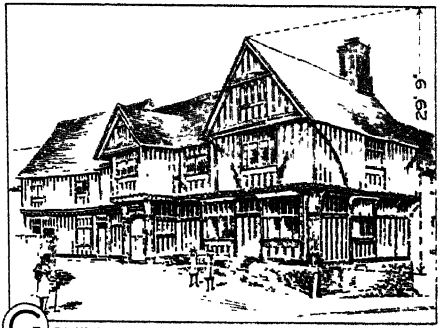
D GUILDHALL : CIRENCESTER



E HALL OF THE BUTCHERS' GUILD : HEREFORD

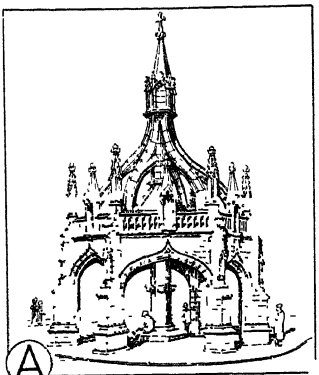


F MARKET HALL : LEDBURY : HEREFORD

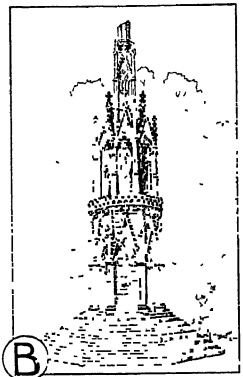


G GUILDHALL : LAVENHAM : SUFFOLK

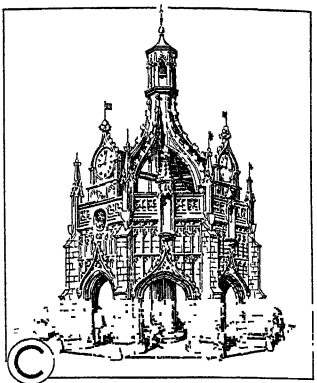
MEDIÆVAL CROSSES & TITHE BARNS



A CITY CROSS: SALISBURY

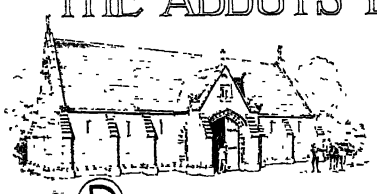


B ELEANOR +: NORTHAMPTON

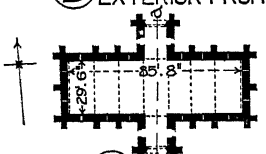


C MARKET CROSS: CHICHESTER

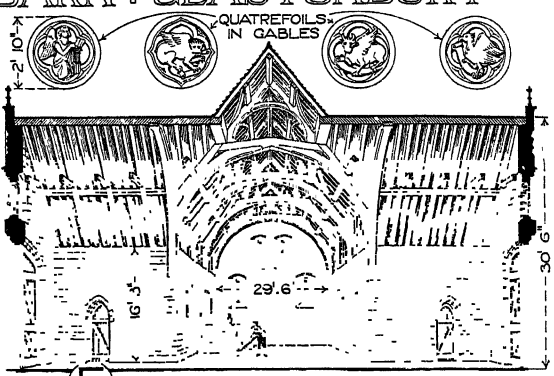
THE ABBOT'S BARN: GLASTONBURY



D EXTERIOR FROM S.W.

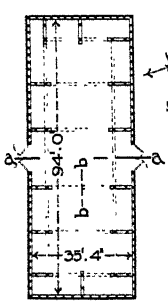


E PLAN

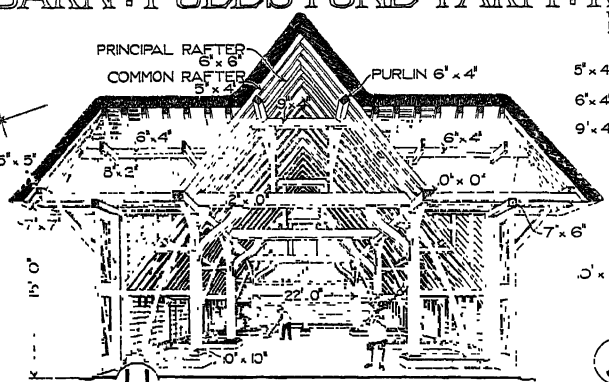


F SECTIONAL INTERIOR ON a-a

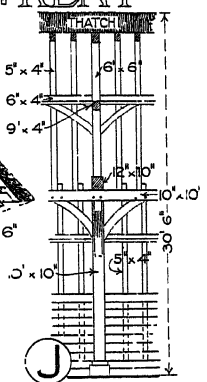
OLD BARN: FULLSTONE FARM: KENT



G PLAN



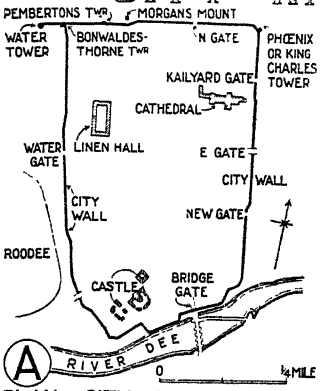
H SECTIONAL INTERIOR ON a a



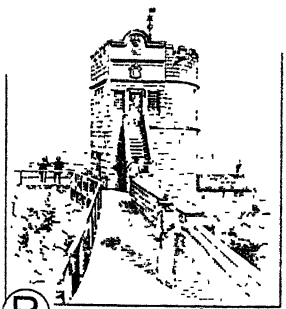
J DETAIL AT b-b

CITY WALLS & GATEWAYS

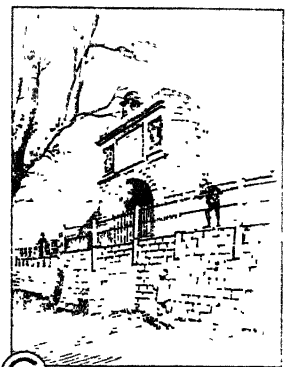
CHESTER



A PLAN OF CITY WALLS, CHESTER

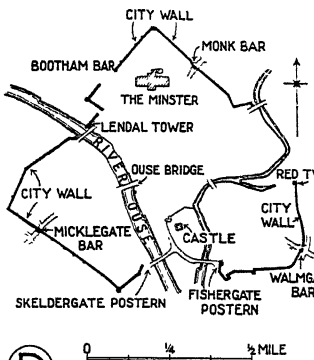


B KING CHARLES' TOWER

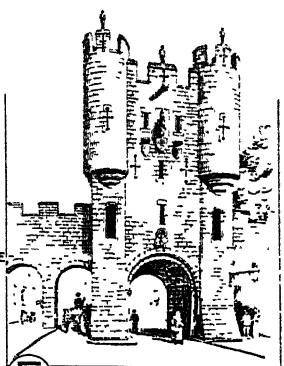


C PEMBERTONS TOWER

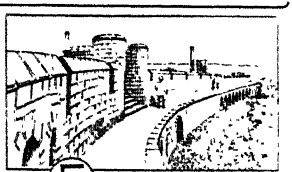
YORK



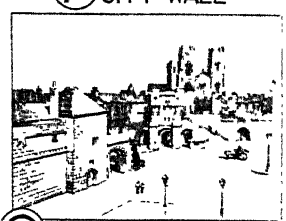
D PLAN OF CITY WALLS, YORK



E MICKLEGATE BAR



F CITY WALL



G BOOTHAM BAR & MINSTER

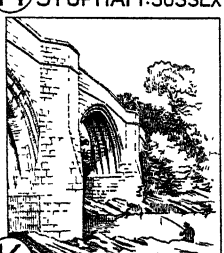
BRIDGES



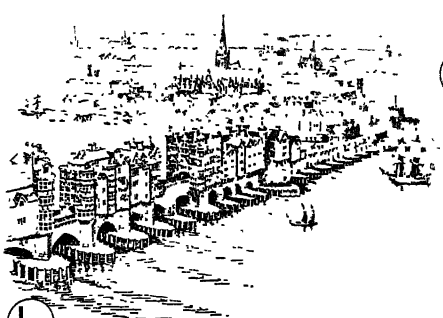
H STOPHAM: SUSSEX



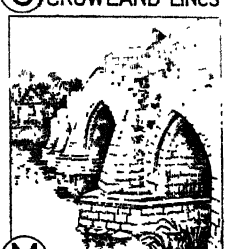
J CROWLAND LINCS



K KIRKBY LONSDALE

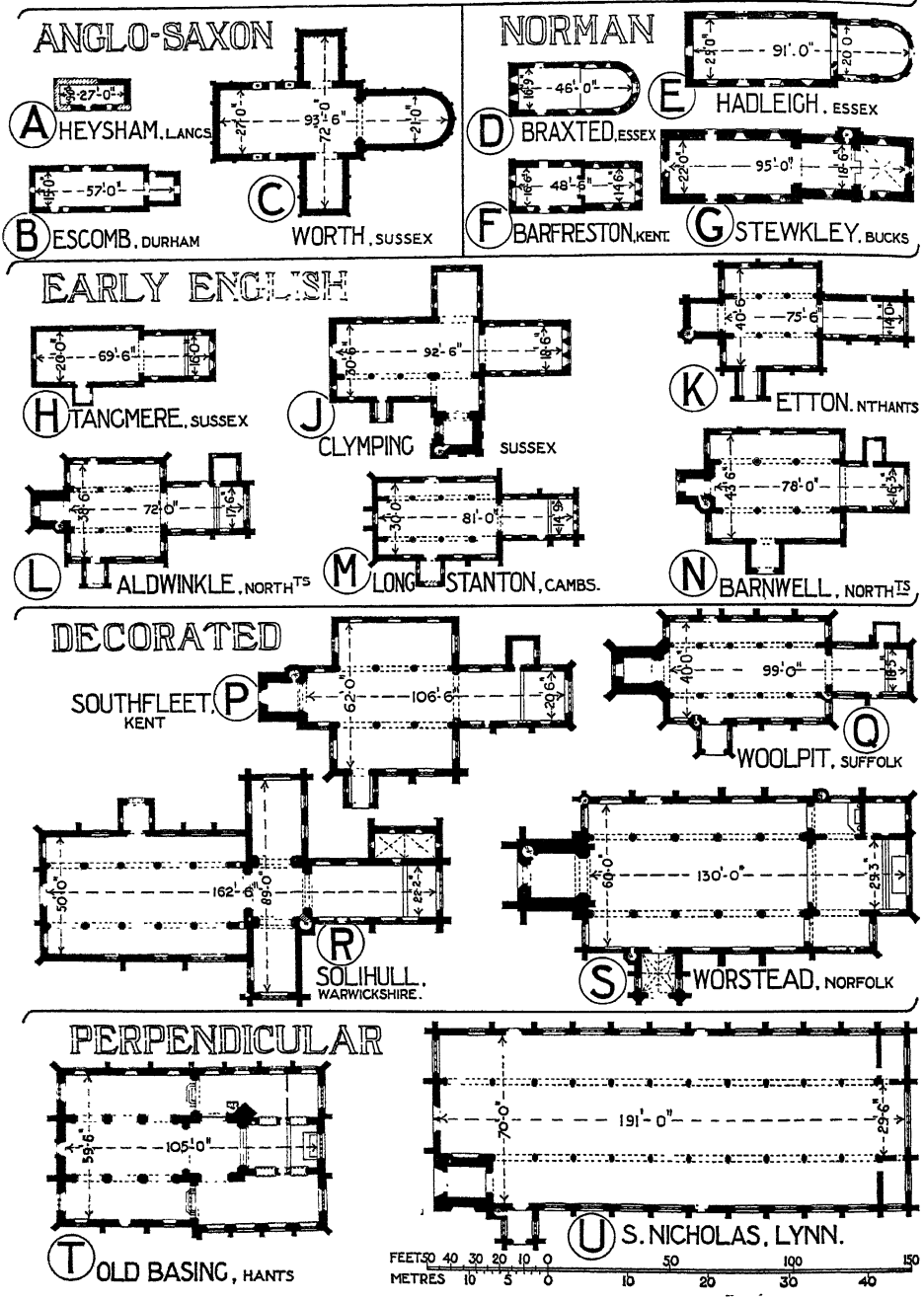


L OLD LONDON BRIDGE (CIRCA A.D 1647) FROM S.



M AYLESFORD: KENT

EVOLUTION OF CHURCH PLANS



monastic rule, and these suffered severely on the Dissolution of the Monasteries (A.D. 1536–40), so that it became necessary to start further schools, as at Sutton Coldfield (A.D. 1544) and Tonbridge (A.D. 1553). The Chantries Act (A.D. 1548), which abolished guilds and chantries, was also disastrous for schools, while " song " schools too were mostly suppressed as superstitious. Some schools, however, survived; some were re-established by King Edward, others owed their rise to Reformation influences in his reign, and all these were called " Free Grammar Schools of King Edward VI," such as Berkhamsted (A.D. 1549) and Sherborne (A.D. 1550). Shrewsbury (A.D. 1551), Bedford (A.D. 1552), and Christ's Hospital (A.D. 1553) are conspicuous among many schools that were started after the Reformation.

HOSPITALS, ALMSHOUSES, AND BEDE HOUSES

Hospitals, Almshouses, and Bede Houses increased in number on the decline of the monasteries, some of whose lost service they were designed to meet, and thus there was much similarity between them in purpose and design. These buildings were founded in the main by persons charitably inclined, as refuges for the infirm and destitute, and were endowed with revenues for their support.

The **Hospital of S. Cross, Winchester** (A.D. 1136) (p. 388), believed to be the oldest almshouse in England, was founded by Bishop Henry of Blois for thirteen poor and aged men. It is a remarkable group of massive gatehouse, fine cruciform late Norman church, and quadrangle around which are the master's house, refectory, and dwellings.

S. Mary's Hospital, Chichester, founded for thirteen poor persons, dates from the end of the thirteenth century. The doorway leads into the hall (p. 388 E) flanked by dwelling-rooms and covered by a wide-spreading timber roof (p. 388 F), while behind the screen of the hall is a chapel, with ancient seating.

Ford's Hospital, Coventry (A.D. 1529) (p. 388), is a fascinating old-world refuge in the traditional half-timber style, founded by William Ford for five poor men and one woman. The living-rooms range round an inner half-timber court and the exterior has fine carved barge-boards.

The **Almshouses, Cobham** (A.D. 1598) (p. 389), also called the Priests' College, form a most attractive group close to the parish church. They were founded by Lord Cobham on the site of a chantry, and consist of a quadrangle round which are the dwelling-rooms, while there is a large hall with canopied fireplace and arched timber roof (p. 389 C).

The **Hospital, Ewelme** (A.D. 1436) (p. 389), founded by the Duke of Suffolk, consists of rooms round a quadrangle with cloister walk, above which rise dormers with carved barge-boards. Steps lead at the upper end to the church, in which are the tombs of the founders, while to the south are the school buildings in fine patterned brickwork. The triple group of hospital, school, and church on rising ground is one of the most picturesque in England.

The **Bede House, Stamford** (A.D. 1490) (p. 389), was founded by Alderman Browne, for ten poor men and two nurses. The dignified entrance porch (p. 389 J) leads into a quadrangle, south of which is the dormitory, arranged, like that of S. Mary's, Chichester, as a long hall with cubicles on either side and a chapel at the end, with large transomed windows; while to the north are nurses' and wardens' quarters.

Other examples are to be found in many English towns, such as **S. John's**

Hospital, Northampton (A.D. 1140), the **Great Hospital, Norwich** (A.D. 1246), **S. John's Hospital, Sherborne** (A.D. 1437), and **Christ's Hospital, Abingdon** (A.D. 1553), and they owe their origin to local benevolence.

INNS

Inns of the Middle Ages, as well as monasteries, provided accommodation for travellers, whether the king and his retainers, merchants, wandering scholars, or pilgrims, while many inns were used as posting houses.

The **Guesten Hall, Worcester** (A.D. 1320) (p. 393), must have been a most beautiful building situated south of the cathedral, but it is now a ruin. It appears to have been set apart for strangers, because the monastic rules did not allow guests to sit with monks at the table. The roof (p. 393 C) now covers Trinity Church, Worcester.

The **George Inn, Glastonbury** (p. 390 J), is a substantially built structure with mullioned and traceried windows.

The **Feathers Inn, Ludlow** (p. 390 N), is a delightful bit of half-timber construction and a pleasant reminder of the local style of building.

Among the smaller inns which still exist (p. 390) may be mentioned the Fighting Cocks, S. Albans; the George, Norton S. Philip; the Bell Inn, Woodbridge; the Anchor Inn, Ripley; the Six Bells, Hollingbourne; the King's Head, Sissinghurst; the Eagle and Child, Alderley Edge; the Star, Alfriston; the Fox and Hounds, Barley; the Falstaff Inn, Canterbury, with its fine wrought-iron sign, and the Dolphin Inn, Norwich.

GUILDHALLS

The **Guildhall, London,** dating from A.D. 1411, is the most important of all the halls erected by the Guilds in the Middle Ages, but was partly burnt down in the Great Fire. It was altered by Wren, and has a Gothic-like façade (A.D. 1789) by George Dance, Junior, but it was not until the nineteenth century that Sir Horace Jones restored the Great Hall to its original appearance and added the modern roof (A.D. 1864–70) (pp. 326, 772). It has been the stage upon which some of the most important events in English history have been enacted. The **Guildhall, Cirencester** (p. 393 D), the **Guildhall, Lavenham** (p. 393 G), the **Hall of the Butchers' Guild, Hereford** (p. 393 E), and the **Guildhall, York** (fifteenth century), with its fine oak columns and handsome roof, are other examples of the secular architecture of the period.

MARKET HALLS AND CROSSES

Markets were established in most provincial towns where the farmers could bring their produce for sale, and Domesday Book records about fifty such markets, while annual fairs provided other facilities for commerce, and sometimes, like the markets, were held in churchyards. The **Market Hall, Ledbury** (A.D. 1633) (p. 393 F), has a covered market with sixteen oak pillars, over which is the Town Hall. The beautiful **Market Crosses, Salisbury** (p. 394 A) and **Chichester** (p. 394 C), still serve their original purpose, which was akin to that of the market halls, and show the similarity in type of the commercial and ecclesiastical architecture of the period.

TITHE BARNS

Many old tithe barns throughout the country are fascinating in the simplicity of the rough but honest craftsmanship which went to the making of their walls and primitive timber roofs. The **Abbot's Barn, Glastonbury** (p. 394 D–F), and the **Old Barn, Fullstone** (p. 394 G–J), show the sturdy character of this type of building and the carpenter's skill in framing up the timbers, both in wall and roof, while the barns at Bradford-on-Avon (A.D. 1350), Frocester, and Preston-Flucknett display similar directness in construction.

CITY WALLS AND GATEWAYS

Towns which date from the Roman period and earlier were surrounded by defensive walls upon which Mediæval walls were afterwards constructed, but much has been destroyed to allow for expansion. London, Canterbury, Colchester, Lincoln, Gloucester, Chichester, Southampton, Chepstow, and Winchester among others, most with fragments of Roman origin, still retain portions more or less perfect of their Mediæval walls and gateways.

The **City of Chester** (p. 395) still possesses its walls in fine preservation to a height of about 12 ft. They are about two miles in length and entirely surround the city, and are strengthened at intervals by towers, of which King Charles' Tower is an example; both this and the Pemberton Tower show the walking way behind the parapet on which the defenders could keep watch.

The **City of York** (p. 395) still retains about two and a half miles of its Mediæval wall on both sides of the River Ouse, principally dating from the reign of Edward III. The ramparts (p. 395 F) are protected and strengthened by battlemented towers. Micklegate Bar, Bootham Bar, and Walmgate Bar, dating from the time of Edward I, are among the six imposing defensive gateways, each of which has portcullis, turrets or bartizans, and cross loopholes crowned by battlements.

BRIDGES

Bridges, which were important means of communication, were often semi-religious in character, and their maintenance was imposed on various authorities. **Old London Bridge** (A.D. 1176–1209) (p. 395 L), commenced by the religious fraternity of "Fratres Pontis," was one of the most famous of all Mediæval bridges, and must have presented a strangely picturesque appearance. It rested on eighteen solid stone piers, strengthened by "starlings" to protect them against the scour of the tide. These piers, connected by arches, supported the roadway with its houses and shops which paid for the upkeep of the bridge, while on the central pier was the chapel of S. Thomas of Canterbury. The bridge lasted over 600 years and was pulled down A.D. 1832 when the present structure, designed by John Rennie, was completed 200 ft. farther west. **Stopham Bridge** (p. 395 H), **Kirkby Lonsdale Bridge** (p. 395 K), **Aylesford Bridge** (p. 395 M), **Wakefield Bridge**, with a chapel, and **Warkworth Bridge**, Northumberland, are in good preservation. The **Bridge, Crowland** (p. 395 J), is a peculiar triangular structure with three pointed arches, carrying three roads over three waterways.

4. COMPARATIVE ANALYSIS

The evolution of English architecture is here traced by comparison of plans, walls, openings, roofs, columns, mouldings, and ornament through the Anglo-Saxon, Norman, Early English, Decorated, Perpendicular, and Tudor periods.

A. Plans.

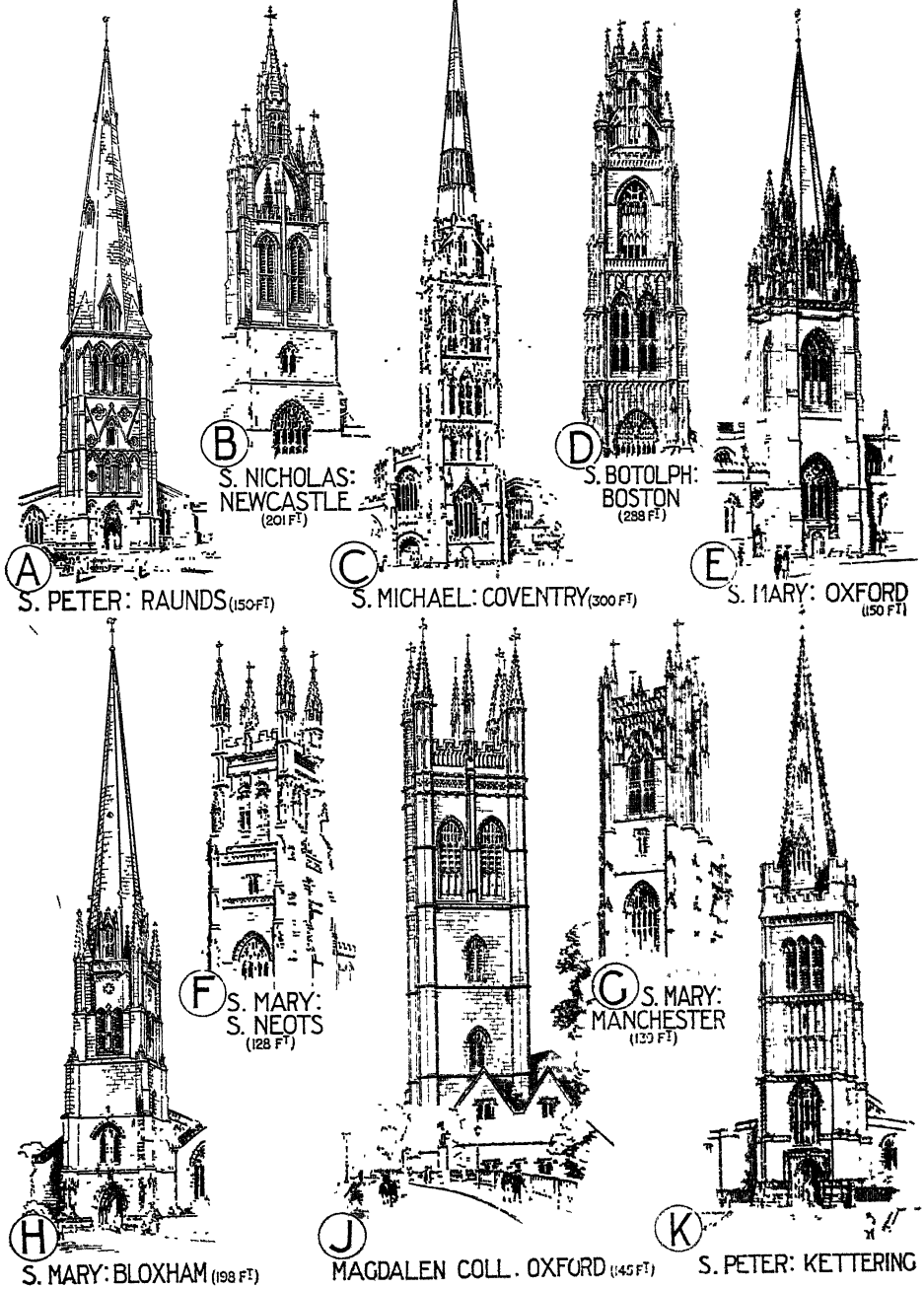
Anglo-Saxon (p. 396).—A church was frequently planned as a simple rectangle (p. 396 A) or as two unequal oblongs, of which the larger was the nave and the smaller the sanctuary, and the distinction was clearly marked, both internally and externally (p. 321 N, Q, 396 B, C). These were joined by a chancel arch, under which steps usually led to a sanctuary (sometimes on a lower level). The latter was generally square-ended, following the Celtic type, as at Bradford-on-Avon (p. 321 Q); but another type, derived from the Roman basilican church, had an apsidal end, as at Worth (p. 396 C) and Brixworth. Towers are without buttresses, as at Earls Barton, Northants (p. 321 C), S. Benet, Cambridge (p. 321 P), and Sompting (p. 321 E).

Norman (p. 396).—The nave was considerably lengthened from the Anglo-Saxon period, transepts were developed, and there was sometimes a tower over the crossing, and the sanctuary became apsidal in cathedrals and some churches (p. 396 D, E). Many cathedrals were rebuilt in this period, and in those of Norwich, Durham, Ely, S. Albans, and Winchester the naves are conspicuous for their length. S. John's Chapel, Tower of London (p. 364 C, E), is a Norman church in miniature. Towers are square and massive, as at S. Albans and Iffley, but many churches in Norfolk and Suffolk have round towers, either due to Scandinavian influence or to the absence of stone suitable for square angles, as they are built of knapped or unknapped flints. Plans of English cathedrals are given on pp. 332, 333, 334, 335. For plans of castles and manor houses of this period see pp. 362, 368.

Early English (p. 396).—Church plans were very similar to the Norman, and the difference was chiefly brought about by the introduction of the pointed arch, which made it possible to construct oblong instead of square vaulting compartments, each complete in itself; while many Norman apses were transformed into square-ended sanctuaries of Anglo-Saxon type (p. 396 H–N). The "broach" spire rising from the square tower without a parapet was introduced (p. 401 A), and the steeple of S. Mary, Oxford (p. 401 E), is an early example of a tower surmounted by clustered pinnacles behind which rises the low pyramidal spire. Plans of English cathedrals are given (pp. 332, 333, 334, 335). For plans of castles and manor houses of this period see pp. 367, 373.

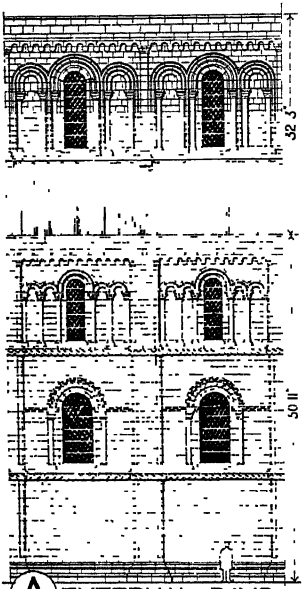
Decorated (p. 396).—Nave bays of new cathedrals and churches were given a wider spacing than in earlier periods; and in proportion as piers became more slender, the floor space was increased, thus the interiors were more spacious (p. 396 P–S). Several great central towers were now carried up, as Salisbury (pp. 329 G, 345 B), and Lichfield (pp. 329 E, 351). The "broach" spire gradually gave way to the lofty spire with parapets, angle pinnacles, and spire-lights, while moulded ribs, ornamented with crockets, accentuate the angles of these tapering spires (p. 401); sometimes the spire is raised on an octagonal basement, as at Bloxham (p. 401 H). Plans of English cathedrals are given (pp. 332, 333, 334, 335). For plans of castles and manor houses of this period see pp. 367, 373.

TOWERS & SPIRES

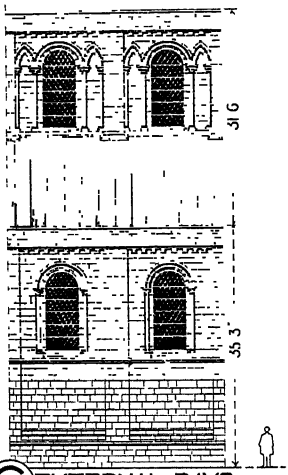


THE COMPARATIVE TREATMENT OF

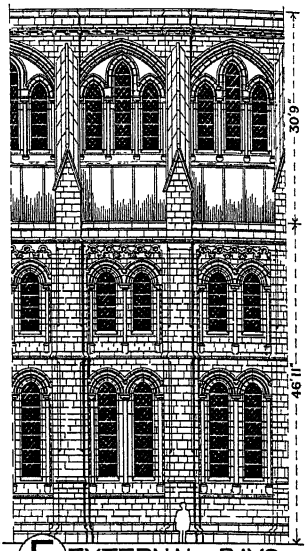
NORMAN TRANSITIONAL EARLY ENGLISH (LANCET)



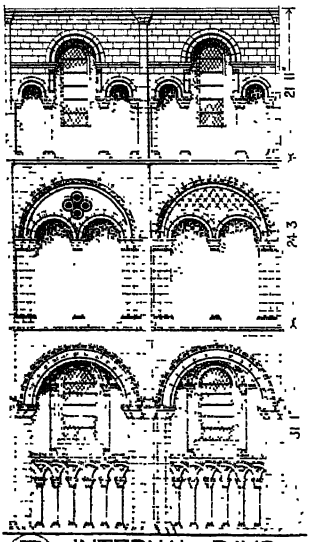
A EXTERNAL BAYS



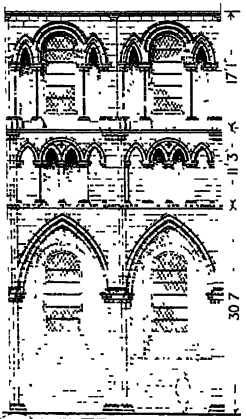
C EXTERNAL BAYS



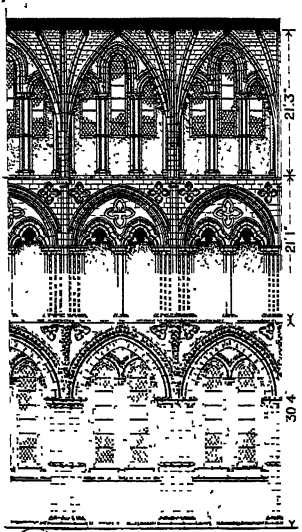
E EXTERNAL BAYS



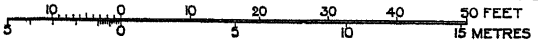
B INTERNAL BAYS PETERBOROUGH CHOIR



D INTERNAL BAYS RIPON CHOIR

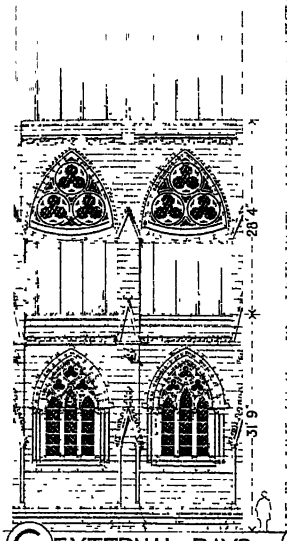


F INTERNAL BAYS ELY PRESBYTERY



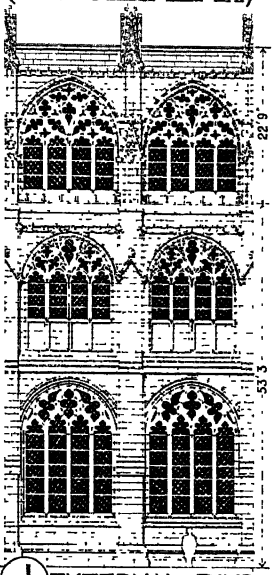
ENGLISH GOTHIC CATHEDRALS

DECORATED (GEOMETRICAL)



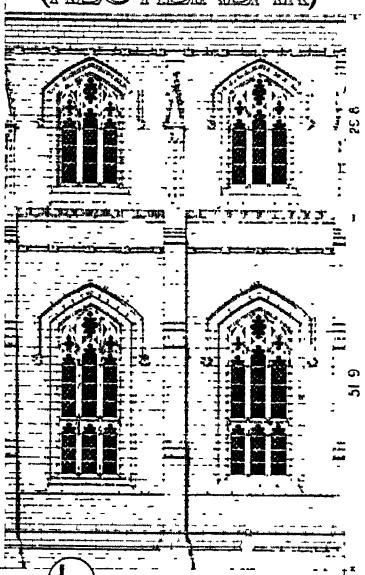
G EXTERNAL BAYS

DECORATED (CURVILINEAR)

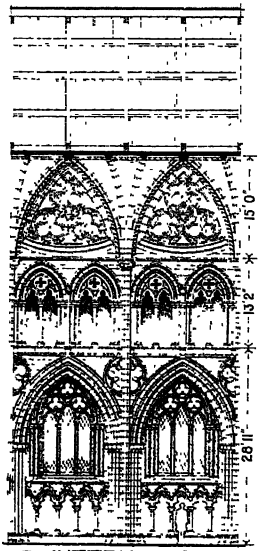


J EXTERNAL BAYS

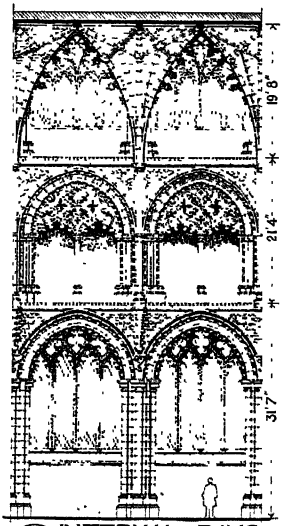
PERPENDICULAR (RECTILINEAR)



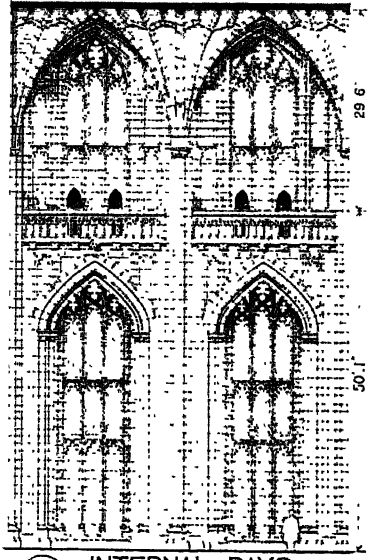
L EXTERNAL BAYS



H INTERNAL BAYS
LICHFIELD: NAVE

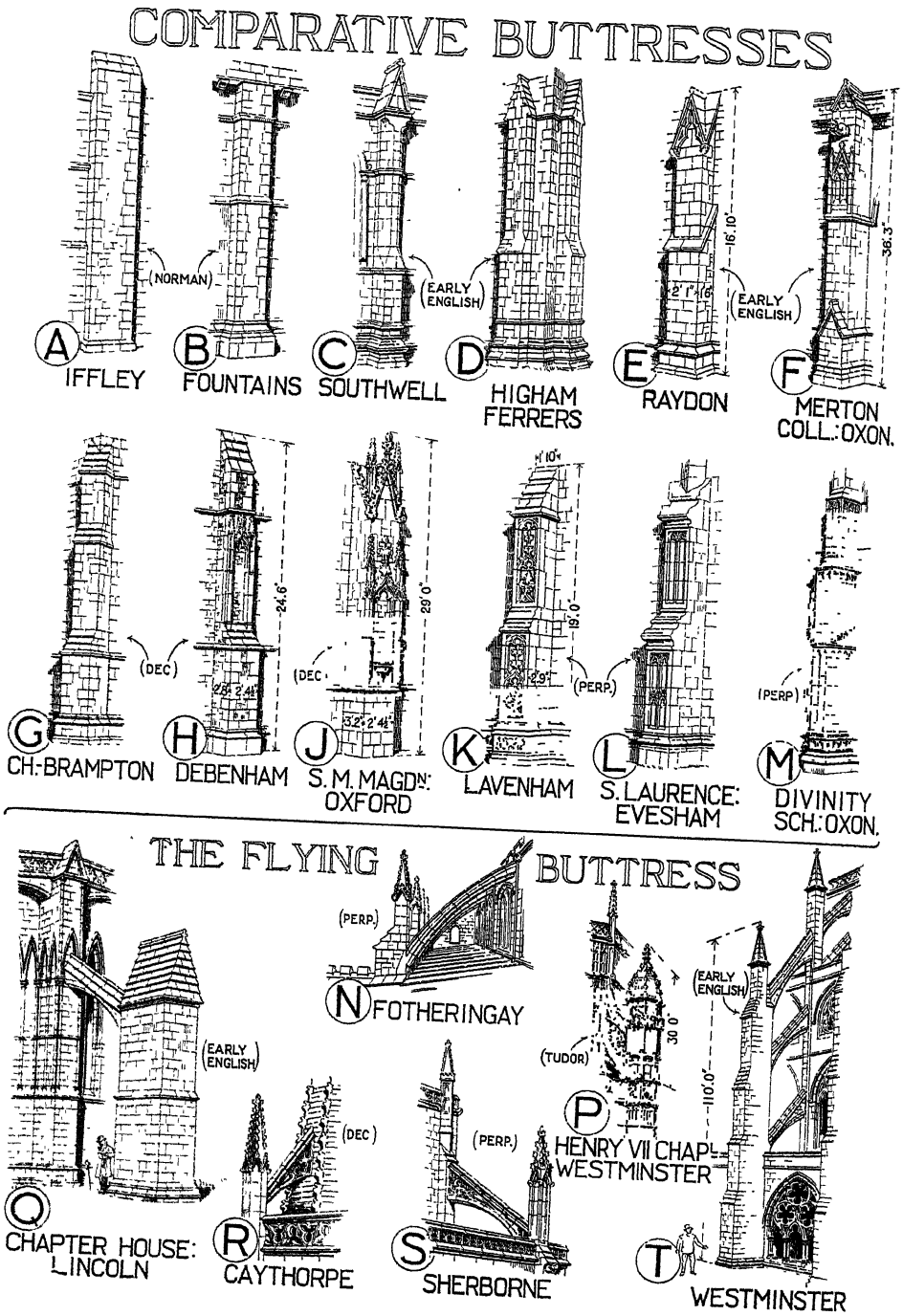


K INTERNAL BAYS
ELY: CHOIR



M INTERNAL BAYS
WINCHESTER: NAVE

10 0 10 20 30 40 50 FEET
5 0 5 10 15 METRES


COMPARATIVE BUTTRESSES
(NORMAN)
(EARLY ENGLISH)
16'.10"
2'1"/6"
(EARLY ENGLISH)
36'.3"
A IFFLEY
B FOUNTAINS
C SOUTHWELL
D HIGHAM FERRERS
E RAYDON
F MERTON COLL.: OXON.
(DEC)
24'.6"
2'8".2'4"
(DEC)
29'.0"
3'2".2'4"
1'.10"
19'.0"
2'9"
(PERP.)
(PERP.)
G CH.: BRAMPTON
H DEBENHAM
J S. M. MAGDN: OXFORD
K LAVENHAM
L S. LAURENCE: EVESHAM
M DIVINITY SCH.: OXON.
THE FLYING BUTTRESS
(PERP.)
N FOTHERINGAY
(EARLY ENGLISH)
(TUDOR)
30'.0"
(EARLY ENGLISH)
110'.0"
P HENRY VII CHAPL: WESTMINSTER
Q CHAPTER HOUSE: LINCOLN
(DEC)
R CAYTHORPE
(PERP.)
S SHERBORNE
T WESTMINSTER

Perpendicular (p. 396).—Owing to the building activity of preceding centuries, few ecclesiastical buildings of first importance were planned, though many were altered or enlarged. Many parish churches indicate the tendency to reduce the size of piers and to throw the roof weight externally on projecting buttresses, which were rendered more necessary by the increased size of windows (p. 396 T, U). Towers were erected without spires, as the Bell Tower, Evesham (A.D. 1533), and elsewhere (p. 401 D, F, G, J), but when a spire occurs it rises behind a parapet, as at S. Peter, Kettering (p. 401 K). A novel type is at Newcastle, where open flying buttresses support a central pinnacle (p. 401 B). Plans of English cathedrals are given (pp. 332–335). For plans of castles and manor houses of this period see pp. 367, 374.

Tudor.—Few churches were built and they were similar in plan to those of the last period. King's College Chapel, Cambridge, and the magnificent royal tomb-house of Henry VII at Westminster Abbey are the last ecclesiastical edifices of importance in the Gothic style. The most characteristic buildings of this period are the numerous manor houses for which a distinctly domestic plan and type of architecture were developed (p. 379).

B. Walls.

Anglo-Saxon.—Walls were generally of rough rubble with ashlar masonry at the angles in "long and short" courses, as at Earls Barton (p. 321 C). Pilaster strips are also frequent.

Norman.—Walls are thick but often defective in construction, as the core was imperfectly bonded with the facing, which, in the later period, was frequently ornamented with arcading. The height of interiors is nearly equally divided between nave arcade, triforium, and clear-story (pp. 341 E, 402 B), and, as in the churches at Caen, there was often a passage between the clear-story windows and the arches carrying the inner part of the wall (p. 323 A). Broad, flat buttresses succeed the Anglo-Saxon pilaster strips and are often flush with the corbel table, which supports a plain parapet (pp. 404 A, B, 402 A, C, 416 A).

Early English.—Walls retain the massive character of Norman work, but more cut stone and less rubble core were employed. The concentration on buttresses of the weight of roof and vaulting began the process carried out in succeeding periods of reducing the walls to a mere enclosing screen of stained-glass windows. The excellent proportions between openings and piers give a light and graceful appearance, as in the transepts of Salisbury Cathedral. Buttresses gradually became more pronounced than in the Norman period till they were generally equal in projection to their width, in order to resist the outward pressure of the pointed vaults. They were formed in receding stages by weathered offsets which were often gabled, and their angles were sometimes chamfered (pp. 404 C–F, 402 E). Flying buttresses (p. 404 Q, T) were first utilised as external features in this period, but were not common till later. In church interiors the nave arcade usually occupies half the height, and the upper half is equally divided between triforium and clear-story, as in the choirs of Ripon (p. 402 D) and Ely (p. 402 F), and the nave of Lincoln (p. 347 C); but sometimes the triforium was reduced in order to allow of a greater display of glass above, as at Westminster (p. 353 A) and Salisbury (p. 345 F). Parapets have moulded copings and ornamental patternwork (p. 416 B).

Decorated.—Walls were gradually transformed, owing to the increased

size of traceried windows and of buttresses, and tracery was extended as panelling even over walls (p. 403 J). Buttresses were still in stages, and late in the period were ornamented with niches, crocketed canopies, and finials (p. 404 H, J), while angle buttresses, set diagonally, were introduced (p. 404 G) and flying buttresses were sometimes pierced (p. 404 R). The internal division of nave arcade, triforium, and clear-story shows, in the latter part of the period, the tendency to reduce still further the height of the triforium in order to secure larger clear-story windows (p. 347), while in other examples there is extreme ornamentation (p. 403 H, K). Parapets were occasionally pierced with flowing tracery (p. 416 C), but this was a French feature, and the English generally preferred the battlemented form.

Perpendicular.—Walls were profusely ornamented with panelling, resembling window tracery, as in the late Perpendicular or Early Tudor Chapel of Henry VII, which is most elaborate in detail, and a miracle of beauty (p. 358 A). Knapped flint was used as wall facing for panels, in conjunction with stone tracery in Norfolk and Suffolk. Parapets, embattled, panelled, or pierced (p. 416 D, E, F), were often very ornate, as at Merton College, Oxford. Buttresses project so boldly that chapels were sometimes formed between them, as at King's College, Cambridge (p. 383), and elsewhere (p. 404 K, L, M). Flying buttresses span the aisle roofs and are moulded or pierced and sustained by pinnacles (p. 404 N, S). Interiors, owing to the elimination of the triforium, frequently consist of two stages, viz. nave arcade and clear-story. In place of the triforium there is often a mere line of panelling as at Winchester (p. 403 M) and S. George's Chapel, Windsor (p. 382 H), or of niches for statuary as in the Chapel of Henry VII, Westminster (p. 358).

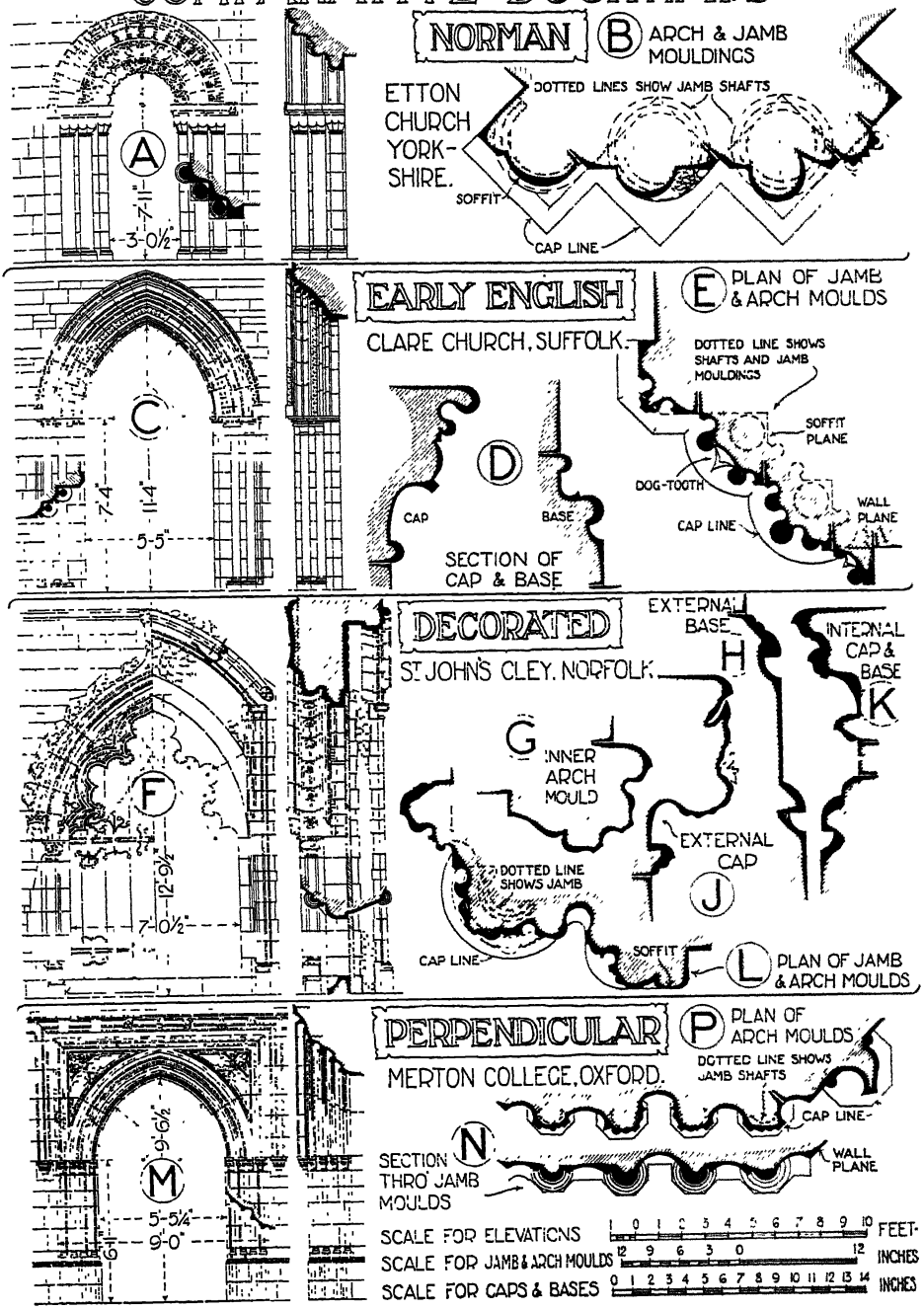
Tudor.—Walls followed on the same lines as the last period, as the Chapel of Henry VII (p. 358 A), but in domestic buildings there is some novelty, as in the extended use of red brickwork with thick mortar joints, in which patterns were formed by darker "headers," as at Hampton Court Palace, Compton Wynyates, and other manor houses. Buttresses have traceried panels, as in the Chapel of Henry VII, and are crowned with finials, often ornamented with crockets, while flying buttresses are often pierced (pp. 358 A, F, 404 P).

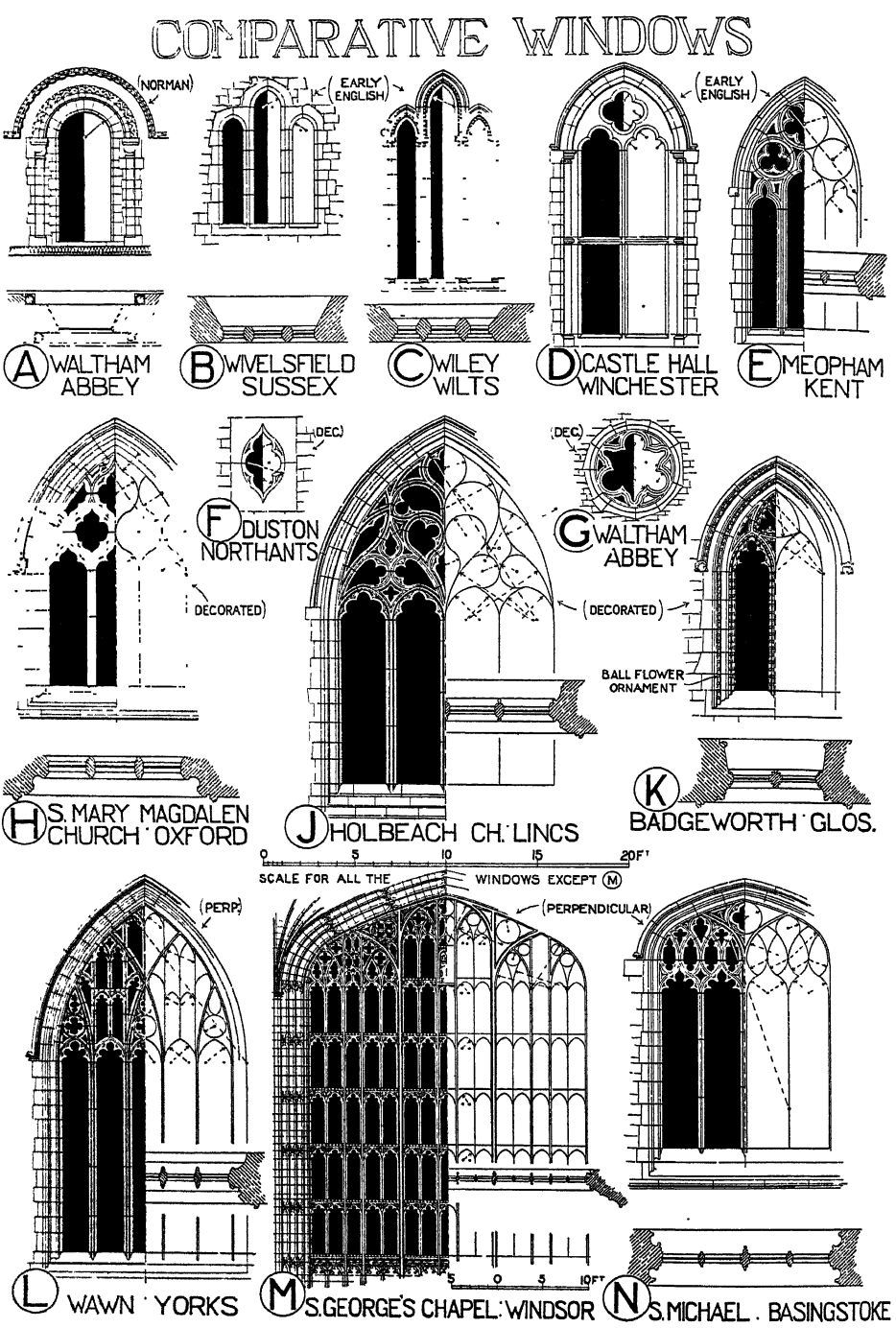
c. **Openings.**

Anglo-Saxon.—Arches, as in the chancel arch, Escomb, and the tower arch, Sompting, are semicircular (p. 321 D) and often unmoulded, and the sides or jambs frequently have "long and short work." Doorways are plainly framed with square, unmoulded jambs, and semicircular arches (p. 321 C, D). Windows have square jambs and either round or triangular heads, as at Deerhurst (p. 321 J), with the occasional addition of a central baluster, as at Worth (p. 321 H) and S. Mary the Younger, York (p. 321 G), and another treatment is that at Earls Barton (p. 321 A, B, C).

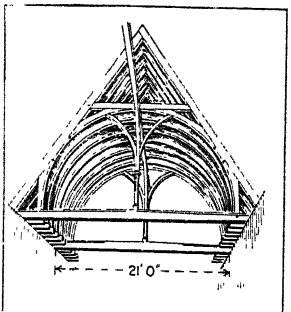
Norman.—Arcades invariably consist of semicircular arches (p. 402 B), unmoulded in the early part of the period, as in S. John's Chapel, Tower of London (p. 364 C), and in the later period they are enriched with mouldings, as S. Bartholomew, London (p. 323 A), and Waltham Abbey. Doorways and windows have jambs in square recesses or "orders" with semicircular arches. These "orders" are frequently carved with zigzag and beak-head ornament, as at Etton (p. 407 A, B), or elaborately sculptured, as at Barfreston, Kent. Windows are small and the internal jambs are

COMPARATIVE DOORWAYS

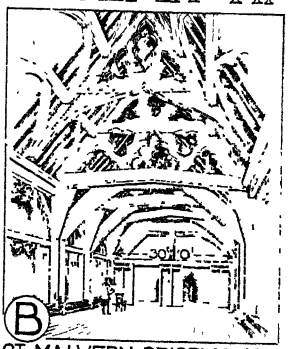



COMPARATIVE WINDOWS
(NORMAN)
(EARLY ENGLISH)
(EARLY ENGLISH)
(EARLY ENGLISH)
A WALTHAM ABBEY
B WIVELSFIELD SUSSEX
C WILEY WILTS
D CASTLE HALL WINCHESTER
E MEOPHAM KENT
(DEC.)
F DUSTON NORTHANTS
(DEC.)
G WALTHAM ABBEY
(DECORATED)
(DECORATED)
BALL FLOWER ORNAMENT
H S. MARY MAGDALEN CHURCH · OXFORD
J HOLBEACH CH. LINCS
K BADGEWORTH · GLOS.
0 5 10 15 20FT
SCALE FOR ALL THE WINDOWS EXCEPT (M)
(PERP.)
(PERPENDICULAR)
L WAWN · YORKS
M S. GEORGE'S CHAPEL. WINDSOR
5 0 5 10FT
N S. MICHAEL . BASINGSTOKE

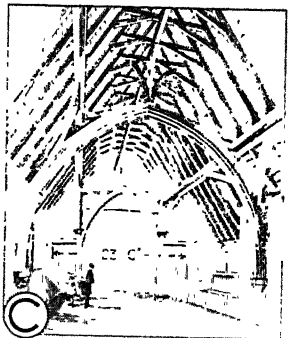
TYPES OF SECULAR TIMBER ROOFS



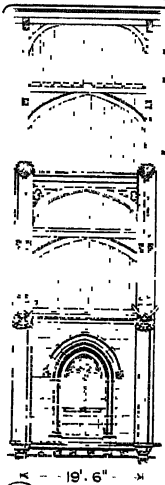
A S. JOHN'S HOSPITAL NORTHAMPTON



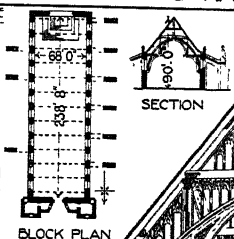
B Gt MALVERN PRIORY: WORCS



C SUTTON COURTENAY: BERKS



D INTERNAL BAY

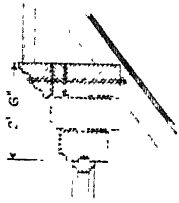


BLOCK PLAN

SECTION

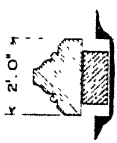


COLLAR BEAM



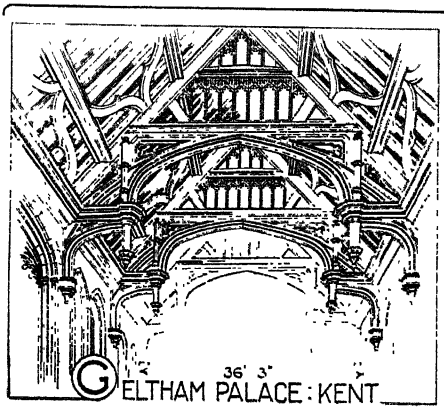
TRUSSED PURLIN

E WESTMINSTER HALL

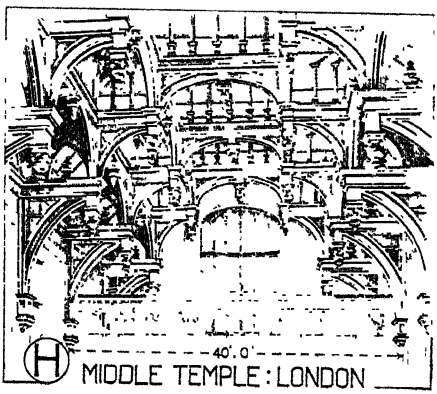


WALL POST AT FOOT

F DETAILS

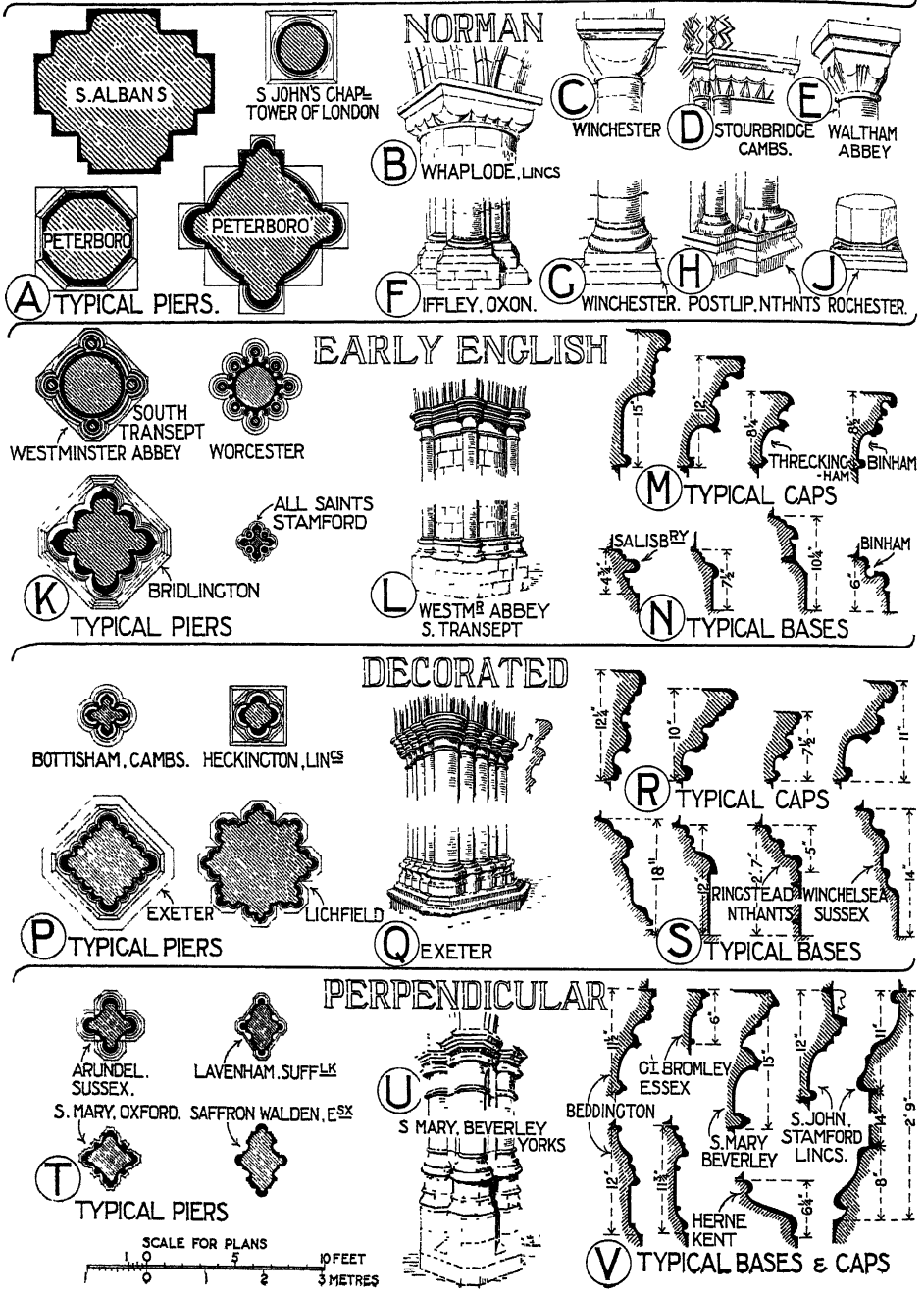


G ELTHAM PALACE: KENT



H MIDDLE TEMPLE: LONDON

COMPARATIVE PIERS, CAPS & BASES.



deeply splayed (pp. 322 A, 408 A). They are in single lights, although double windows divided by a shaft occur in towers, while three openings, of which the middle one is sometimes the largest, are often grouped together, as in S. Bartholomew, London (p. 323 A).

Early English.—Arcades are of more slender proportions, and pointed lancet arches came into general use (p. 402 D, F), at first side by side with round arches (p. 402 C, D) and in connection with vaulting, and then in arches, as at Westminster Abbey and the Temple Church (p. 322 B). Doorways (p. 407 C, D, E) have jambs enriched with mouldings, detached shafts, and richly carved ornaments, and are crowned with lancet arches. Windows (p. 408 B–E) of lancet shape (p. 859) are grouped in two, three, or even five lights, as in the "Five Sisters" in York Minster (p. 344). The glass is often near the face of the wall, thus making deep internal jambs. The early form of "plate" tracery (p. 408 D) which was cut through a plate of stone was developed into "bar" tracery. The two-light windows of Westminster Abbey, with geometrical tracery dating from A.D. 1245, are among the earliest traceried windows in England (p. 354 D). Cusps (Lat. *cuspis* = a point), let into the soffit of tracery arches in separate pieces, were introduced, as at Raunds, Northants, and are found especially in circular lights, but in later window-heads the cusps are an integral part of the traceried mouldings. The spaces between the cusps are known as trefoil (p. 365 D), quatrefoil, or cinquefoil (Lat. *folium* = a leaf) according as they are composed of three, four, or five openings (p. 859).

Decorated.—Arcades became wider in proportion to their height and were crowned with equilateral arches (pp. 403 H, K, 859), i.e. struck from the points of equilateral triangles, as at York and Lichfield, and the ogee arch came into use (p. 859). Doorways (p. 407 F–L) have jambs of less depth than in the Early English style, and are ornamented with engaged instead of detached shafts. Windows (p. 408 H, J, K) are large and divided by mullions into two or more lights, and the enlargement of clear-story windows proceeded *pari passu* with the diminution in height of the triforium. Tracery at first consisted of geometric forms, as at Westminster Abbey, the cloisters of Salisbury (p. 345 J), the choir clear-stories of Lincoln (p. 347 G) and Lichfield (p. 403 G), and the nave of York. In the latter part of the period it consisted of curvilinear or flowing lines, as in the choirs of Ely (p. 403 J) and Wells. Cusps which, in the Early English style, had often been let into the stone tracery now formed part of it. Smaller types of windows still occur (p. 408 F, G).

Perpendicular.—Arcades now usually consist either of "drop" arches (pp. 323 B, 859) or in the later period of four-centred arches (pp. 403 L, 859), of which the spandrels are sometimes filled with tracery or carving (p. 403 M). Doorways are generally finished with a square hood-moulding over the arch, and the spandrels are ornamented, as in the doorway of Merton College, Oxford (p. 407 M). Windows, of which the earliest in the style are probably those at Winchester (p. 352), have mullions continued vertically through their whole height up to the main arch, an arrangement which produces a perpendicular effect and gives the name to the style (p. 408 L, M). In many cases they are of enormous size, strengthened by horizontal transoms, and even form a wall of glass, as at S. George's Chapel, Windsor (pp. 382, 408 M), the east window at Gloucester (38 ft. wide by 72 ft. high), King's College Chapel, Cambridge (p. 383), and the Chapel of Henry VII, Westminster (p. 358).

Tudor.—Arcades are of wider span and are generally crowned by typical four-centred Tudor arches with spandrels filled with either tracery or carving. Doorways are based on the Perpendicular type with four-centred arches (p. 378 K), often enclosed in a square hood-moulding, and the spandrels are often carved with heraldic devices (p. 378 B). Large windows with perpendicular mullions and horizontal transoms were now chiefly used for domestic architecture (p. 378 E), and the pointed arch was frequently omitted, to suit the flat ceilings of living-rooms, and its place externally taken by a hood-moulding terminating laterally in carved bosses (p. 376 A). Projecting bay and oriel windows give variety to façades, not only of manor houses, as at Compton Wynyates (p. 376 B), Great Chalfield (p. 371 D), and Athelhampton (p. 372 A), but also of the numerous colleges of a quasi-religious nature, as at Oxford and Cambridge.

D. **Roofs.**†

Anglo-Saxon.—Saxon vaults, based on Roman, were plain and simple. There is no exact knowledge of roofs of this period, as none exist, but they were probably either of simple timber construction covered with slate (p. 321 K, L, M), or of stone slabs in horizontal layers approaching each other till they met at the apex, as in early Irish churches. In some illuminated manuscripts buildings are represented as covered with slates or shingles. Tower roofs were sometimes, as at Sompting (p. 321 E), formed by four planes lying on the gables and meeting in ridges above the apex in each case, a peculiar form shown in some Rhenish churches.

Norman.—Norman roofs were chiefly of king-post form with an inclination of forty-five degrees and were covered with lead or shingles. The simple framing is either left exposed internally or there is a flat ceiling, boarded and painted, as at Ely and Peterborough (p. 341 H). Cathedrals and abbeys of this period originally had wooden ceilings, but were vaulted later, as Gloucester, Exeter, and Durham. The introduction of rib and panel vaulting (p. 324 B) eventually supplanted the Roman method of intersecting cross-vaults in which the meeting lines were simple groins, as in the crypt of Canterbury Cathedral (A.D. 1096–1107) (p. 324 A) and S. John's Chapel, Tower of London. Early rib and panel vaulting is seen in the ambulatory, Canterbury Cathedral, and the north aisle of Durham Cathedral. There is sexpartite vaulting in the choir of Canterbury (p. 346 B), erected by William of Sens (A.D. 1195), while the nave vault at Durham has, it is believed, the earliest pointed arches over a high vault in England (p. 336 B).

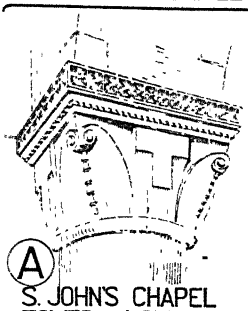
Early English.—Roofs became steeper externally with an inclination of about sixty degrees. Where there was no stone vaulting the framing was left exposed internally, and the braces or ribs, together with the close-set rafters, produce the effect of a waggon-shaped vault (pp. 363 C, 409 A). Vaults (p. 324 C, D) are marked by the general use of the pointed arch as in Westminster Abbey, which surmounted all difficulties of vaulting the oblong nave compartment, which had ribs of such varying span. The main ribs consisted of transverse, diagonal, and wall ribs, to which were added later intermediate ribs or " tiercerons " and ridge ribs, as in Lincoln Cathedral (p. 348 B).

Decorated.—Roofs are of more moderate pitch, and sometimes have open framing internally, of which Great Malvern Priory (p. 409 B), Heckington Church (p. 360 B), and S. Etheldreda, Holborn, are good specimens.

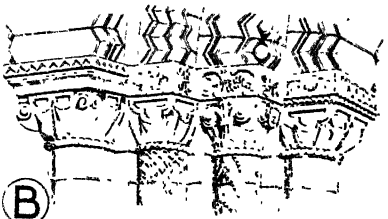
† For the evolution of English vaulting see p. 327, and for a description of English Mediæval roofs see p. 356.

COMPARATIVE CARVED CAPITALS

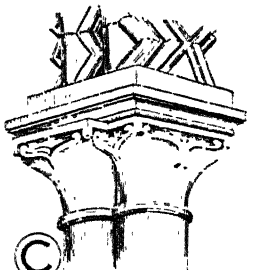
NORMAN



A S. JOHN'S CHAPEL TOWER OF LONDON



B S. PETER: NORTHAMPTON



C GALILEE: DURHAM CATH.

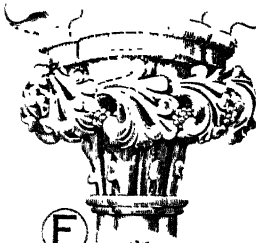
EARLY ENGLISH



D GALILEE PORCH ELY CATHEDRAL

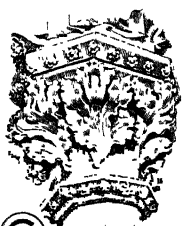


E BRIDLINGTON PRIORY: YORKS



F CHAPTER HOUSE SALISBURY CATH.

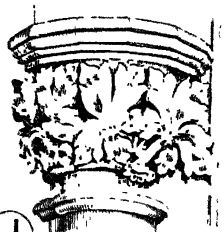
DECORATED



G BEVERLEY MINSTER: YORKS

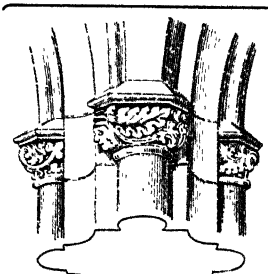


H CHAPTER HOUSE SOUTHWELL MINSTER



J LADY CHAPEL ELY CATHEDRAL

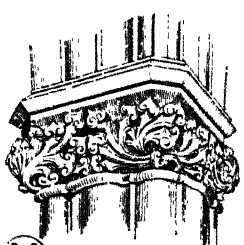
PERPENDICULAR



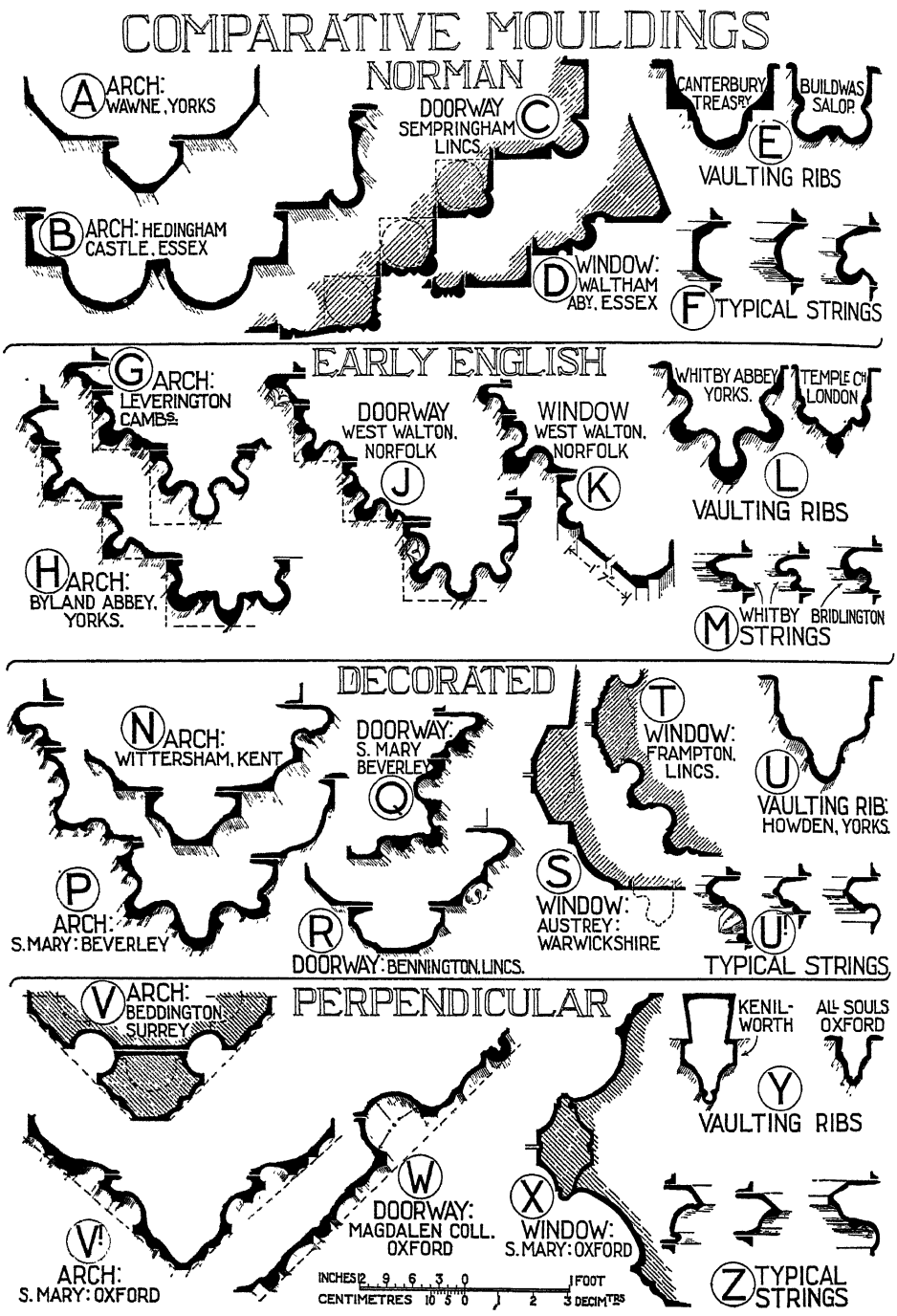
K PIDDLETON: DORSET



L WOLBOROUGH: DEVON



M KENTON: DEVON


COMPARATIVE MOULDINGS
NORMAN
A ARCH: WAWNE, YORKS
B ARCH: HEDINGHAM CASTLE, ESSEX
DOORWAY SEMPRINGHAM LINCS.
C
D WINDOW: WALTHAM ABY, ESSEX
CANTERBURY TREASRY
BUILDWAS SALOP.
E VAULTING RIBS
F TYPICAL STRINGS
EARLY ENGLISH
G ARCH: LEVERINGTON CAMBS.
H ARCH: BYLAND ABBEY, YORKS.
DOORWAY WEST WALTON, NORFOLK
J
WINDOW WEST WALTON, NORFOLK
K
WHITBY ABBEY YORKS.
TEMPLE CH LONDON
L VAULTING RIBS
M WHITBY BRIDLINGTON STRINGS
DECORATED
N ARCH: WITTERSHAM, KENT
P ARCH: S. MARY: BEVERLEY
DOORWAY: S. MARY BEVERLEY
Q
R DOORWAY: BENNINGTON, LINCS.
T WINDOW: FRAMPTON, LINCS.
S WINDOW: AUSTREY: WARWICKSHIRE
U VAULTING RIB: HOWDEN, YORKS.
U! TYPICAL STRINGS
PERPENDICULAR
V ARCH: BEDDINGTON: SURREY
V! ARCH: S. MARY: OXFORD
W DOORWAY: MAGDALEN COLL. OXFORD
X WINDOW: S. MARY: OXFORD
KENIL-WORTH
ALL SOULS OXFORD
Y VAULTING RIBS
Z TYPICAL STRINGS
INCHES 12 9 6 3 0 FOOT
CENTIMETRES 10 5 0 1 2 3 DECIMTRS

COMPARATIVE ORNAMENTED MOULDINGS

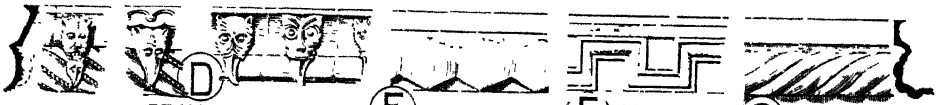
NORMAN



A BILLET — WINCHESTER, CANTERBURY

B NAIL-HEAD — UPTON S.LEONARD

C CHEVRON — N HINKSEY, BREDGAR



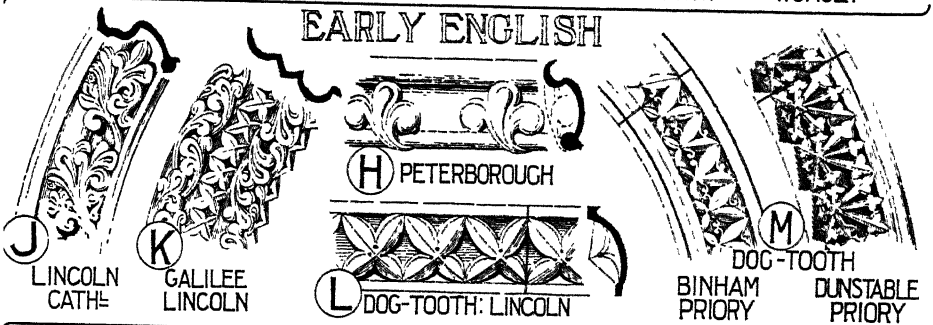
D BEAK-HEAD — IFFLEY, S.EBBE: OXFORD

E DOUBLE CONE — STONELEIGH

F EMBATTLED — SANDWICH

G CABLE — ROMSEY

EARLY ENGLISH



J LINCOLN CATHL

K GALILEE LINCOLN

H PETERBOROUGH

L DOG-TOOTH: LINCOLN

M DOG-TOOTH — BINHAM PRIORY, DUNSTABLE PRIORY

DECORATED



N VINE: SOUTHWELL

P BALL-FLOWER: KIDDINGTON

Q TABLET-FLOWER: COGGS



R TABLET-FLOWER. ELEANOR'S CROSS: NTHMPTN — LADY CHAPEL: WELLS.

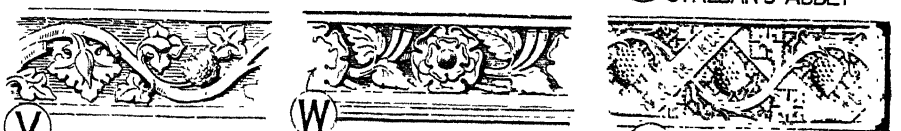
S VINE: MARTHAM (WOOD)

PERPENDICULAR



T CARVINGS: S. FRIDESWIDE'S SHRINE: OXFORD

U S. ALBAN'S ABBEY



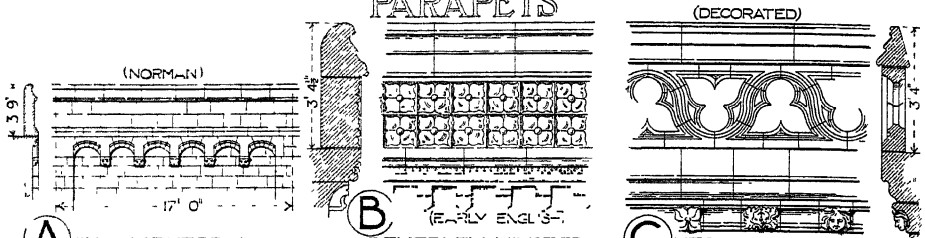
V S. MARY · OXFORD

W HENRY VII CHAPEL: WESTMSTR

X TRUNCH (WOOD)

PARAPETS, GARGOYLES, CRESTINGS & CROCKETS

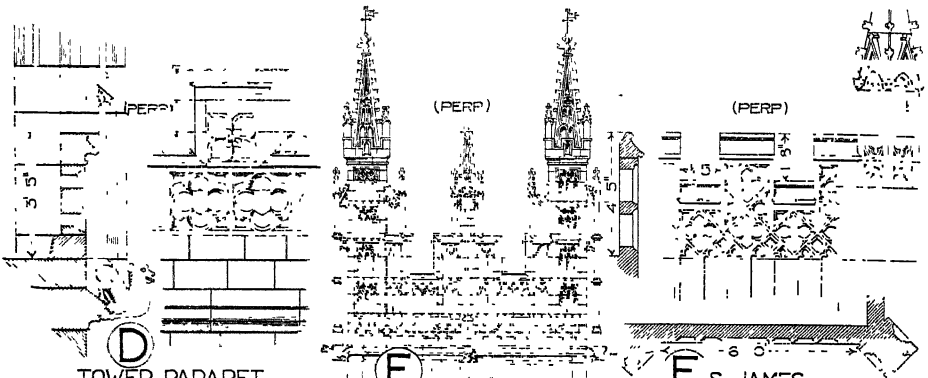
PARAPETS



A ELY CATHEDRAL

B BEVERLEY MINSTER

C HECKINGTON : LINCS.



D TOWER PARAPET
NORTH PETHERTON : SOMERSET

E S. MARY : TAUNTON

F S. JAMES
WESTERLEIGH : SOMERSET

GARGOYLES



G TYPICAL EARLY GARGOYLE



H HOWDEN. YORKS

CRESTINGS



J HY. VII'S CHAPEL
WESTMINSTER



TRUNCH :
NORFOLK K

GARGOYLES



L PATRINGTON YORKS

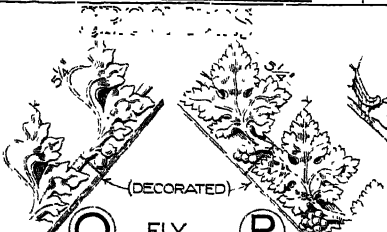


M

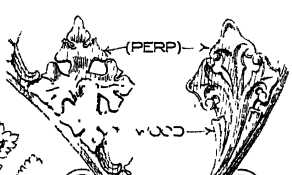


N SALISBURY CATH.

P LINCOLN CATH.



Q ELY CATHEDRAL R



S NORWICH CATHEDRAL T

Vaults (p. 324 E, F) have an increased number of intermediate ribs which tend to reduce the size of panels, and the "lierne" rib led to complicated star-shaped patterns known as "stellar" vaulting, as in the choir of Ely (A.D. 1322) and the nave of Canterbury (A.D. 1379), while the number of bosses occasioned by the numerous ribs add richness to the vaulting surface.

Perpendicular.—Timber roofs of the hammer-beam type are numerous as at Eltham (p. 409 G), especially in East Anglia, and were often richly ornamented with carved figures of angels and pierced tracery (pp. 363, 409), while the later roofs in the style became nearly flat and resembled a floor in construction (pp. 363 G, J, 369 K, 389 K). The roof of Westminster Hall (p. 409), erected in A.D. 1399, covers an area of nearly half an acre, and is one of the largest timber roofs, unsupported by pillars, in the world. Fan, palm, or conoidal vaulting (pp. 324 H, 383) was evolved from the "stellar" vaults of the period and consists of inverted concave cones, with ribs of similar radius, as in the Gloucester cloisters, but the lierne and fan vaults are sometimes combined, as at Sherborne Abbey (A.D. 1475). Pendant vaulting was introduced, in which strong transverse arches support elongated voussoirs forming pendants, from which spring the ribs of the vault, as in the Divinity Schools, Oxford (A.D. 1445–80), and the choir of Oxford Cathedral.

Tudor.—Hammer-beam roofs and other roofs with exposed horizontal rafters were thrown across the halls of many lordly manor houses giving a distinctive charm, as in Compton Wynyates and Wolsey's Palace at Hampton Court (p. 377 E), and these continued in use up to the Elizabethan period, as in the Middle Temple Hall (p. 409 H). Vaulting continued on the same lines as in the fan vault of King's College Chapel, Cambridge, and culminated in the magnificent fan and pendant vault of the Chapel of Henry VII (p. 358), while the vault of S. George's Chapel, Windsor (A.D. 1507–37) (p. 382 H), is an unusual example of side lierne vaults connected to a central barrel vault. Many plaster ceilings of geometrical and pendant type date from this period (p. 378 C). For examples of timber roofs in English parish churches of all periods see p. 356.

E. Columns.

Anglo-Saxon.—Piers were short, stumpy cylinders crowned with square blocks of stone instead of moulded capitals, and the roughly formed balusters in belfry windows appear to have been turned by a lathe and have projecting capitals to support the thick wall (p. 321 B, D, F, G, H, J).

Norman.—Piers (p. 410) are short and massive and either circular or polygonal, as at Gloucester, Bristol, Exeter, and S. John's Chapel, Tower of London, while at Durham diagonal fluting and zigzag channellings were worked on the cylindrical piers (p. 336 B). Clustered piers, made up of rectangular recesses containing shafts, as at Peterborough and Durham (p. 336 B), were often used alternately with cylindrical piers, as at Norwich, Durham, and Waltham. The shape of piers throughout the Mediæval period was influenced by the vaulting shafts which they supported. The small shafts in the recessed "orders" of doorways and windows were sometimes richly carved. Capitals (pp. 410, 413) are usually of cubiform or cushion type, sometimes carved and scalloped, but some, such as the Ionic capital in the Tower of London, are reminiscent of Roman architecture, though the Corinthian type, which occurs in Canterbury (p. 346 B), is more frequently seen in France.

Early English.—Piers (p. 410) are either compound, cylindrical, or octagonal, and often surrounded by detached shafts of Purbeck marble (p. 354 C) held together by bands of stone at intervals, as at Salisbury, the Temple Church (p. 322 B), and Westminster Abbey (p. 357 A, B). Capitals were frequently boldly moulded so as to produce deep shadows, or carved with conventional foliage (p. 413), and the normal abacus is circular on plan, and thus differs from the square abacus of France.

Decorated.—Piers (p. 410), which are sometimes diamond-shaped on plan, are surrounded by engaged shafts, a development from detached Early English shafts. Capitals are usually circular on plan; and when moulded are similar to Early English, but not so deeply undercut, and the carved foliage of oak, ivy, maple, or vine is more naturalistic (pp. 351 D, 413).

Perpendicular.—Piers (p. 410) frequently have four semicircular shafts connected by hollows and side fillets, which are also sometimes carried round the arch (p. 323 B). Piers became more slender and were often oblong on plan with the greater dimension north and south, regulated by the carrying up of the vaulting shafts from the ground. Capitals, now often polygonal on plan, have less pronounced mouldings and the abacus and bell are not so clearly defined (p. 354 E). Capitals when carved have conventional foliage, shallow and square in outline (p. 413). Bases to piers are often polygonal on plan and the " bracket " moulding was in constant use (p. 410 V).

Tudor.—Piers adhered to the slender Perpendicular type with octagonal moulded base and capital, and are principally seen in chantry chapels, sepulchral monuments, and choir stalls, while they were used decoratively in domestic fittings.

F. **Mouldings.**

Anglo-Saxon.—Mouldings were few, and consisted of simple rounds and hollows in capitals (p. 321 D, F) and bases (p. 321 D) formed by the axe, which appears to have been the chief tool employed, but turned balusters in tower windows indicate greater technical skill (p. 321 B).

Norman.—The development of mouldings was a marked feature of this period (p. 414). The jambs of door and window openings were formed in recesses or " orders " and the outer edges were rounded off in bowtell mouldings (p. 863), and from this simple beginning the complicated mouldings of subsequent periods were evolved. The mouldings themselves were elaborately carved with chevron or zigzag, billet, beak-head, nail-head, cable, and double cone, and form an important decorative element in the style (p. 415).

Early English.—Mouldings are bold and deeply undercut, but still follow and accentuate the outline of the rectangular recesses by being arranged on the " wall " and " soffit planes " (p. 414 G, H, J, K). The bowtell moulding is occasionally accompanied by a side or front fillet, and is sometimes so developed with hollows on either side as to be pear-shaped in section, while sometimes it is pointed and formed as a " keel " moulding (pp. 414 G, 867). The chiselled dog-tooth (p. 865) succeeded the axed nail-head of the Norman period and gives a play of light and shade to deeply cut hollow mouldings (p. 415).

Decorated.—Mouldings depart from precedent, as they are sometimes formed on the diagonal or " chamfer plane " instead of on planes parallel either with the wall face or jamb face (p. 414). There is a tendency to disre-

gard the recesses or " orders," which are now sometimes disguised by hollow mouldings at their junction. New varieties are the wave (p. 872) and the ogee (p. 868) mouldings, while the scroll moulding (p. 870) is used in capitals. Hollow mouldings are ornamented with the characteristic ball-flower and the tablet-flower (p. 415). Base mouldings to walls are strongly marked, as in the exterior of Lincoln and Exeter (p. 410 Q). Cornices and strings often have their deep hollows filled with carved foliage (p. 415), while hood-moulds or dripstones are ornamented with crockets terminated with carved heads or grotesques, as at Cley, Norfolk (p. 407 F).

" The carved angels, ever eager eyed
Stared, where upon their heads the cornice rests,
With hair blown back, and wings put crosswise on their breasts."

KEATS.

Perpendicular.—Mouldings were set on the diagonal plane, being wide and shallow, and often large and coarse (p. 414). The wide flat hollow known as the casement and also the bracket moulding are very common (p. 863). Pier mouldings are often continued up from the base round the arch without the intervention of capitals. One set of mouldings, especially in bases, often interpenetrates (i.e. passes behind or in front of) another, and this gives a complicated and intricate appearance. Carved mouldings are enriched with tablet-flowers and flowing vine and rose, and crestings frequently surmount the cornice mouldings (pp. 415, 416 J, K), and diminutive battlements occur along the transoms of windows, while the hollows are enriched with successive cornice flowers.

Tudor.—Mouldings are similar to those of the last period, but owing to their use in fittings of domestic buildings, such as chimney-pieces, wall panels, doors, and ceilings, they were generally smaller and more refined. The lofty moulded and twisted brick chimney-stacks are prominent features in this period. Mouldings begin to indicate the influence of the great Renaissance movement which was gradually being felt in England.

G. Ornament.

Anglo-Saxon.—Sculpture was roughly executed, probably by the mason's axe, and betrays the influence of Roman art; but in the absence of technical skill little carved ornament was incorporated in the fabric of the buildings, which, it is believed, depended on tapestry hangings for internal decoration (p. 321 F).

Norman.—Carved ornament was now often applied to mouldings. Carved foliage, especially the acanthus scroll, is clearly due to Roman art, though executed in a bolder and less refined manner. The tympana over many Norman doorways, such as the Priest's door at Ely, are sculptured with effective though rough representations of Scriptural subjects. Arcades of intersecting arches (p. 341 J) along aisle walls are frequent, and are often piled up in storeys to ornament the whole wall. Stained glass now began to be used, though sparingly, in small pieces, leaded together in mosaic-like patterns. The glass panels in the choir at Canterbury (A.D. 1174) represent Biblical subjects, set in a blue or ruby ground, and framed in brilliantly-coloured scroll-work. Timber roofs were coloured, and sometimes divided into lozenge-shaped panels, as at Peterborough, and the restored roof in Waltham Abbey gives an idea of the original colour treatment. Hanging tapestries gave warmth and interest to interiors, as the famous Bayeux tapestry testifies. The font

(p. 422 A), piscina (p. 422 E), sedilia (p. 422 K), gable cross (p. 421 A), boss (p. 421 J), and corbel (p. 421 N) show the craftsmanship expended on carving, fittings, and furniture in many a country church.

Early English.—The dog-tooth ornament in hollow mouldings was used in great profusion (p. 415 L, M) and the chisel replaced the axe of the Early Norman period. Carved foliage is conventional in treatment, and consists of crisp, curling masses of "stiff leaf foliage" (pp. 413 D, E, F, 415 J, 421 P). Flat surfaces, as in Westminster Abbey (p. 357 A), are often carved with delicate "diaper" patterns (see Glossary), sometimes painted, and doubtless copied from tapestry hangings or painted panels. Large sculptured figures were often placed in canopied niches, and the west front of Wells (A.D. 1220–42), with 300 statues, is a design on the grand scale in which sculpture is combined with architecture (p. 342 B). Arcading of pointed arches often ornamented the lower part of walls, as at Salisbury. Stained-glass windows increased in number and small pieces of glass were still leaded in mosaic-like patterns, in which a violet-blue was a favourite colour, as in Becket's Crown, Canterbury, the "Five Sisters," York, and the rose window, Lincoln. Many fine monuments now added to the beauty of interiors, and Bishop Bridport's monument (p. 387 B) in Salisbury Cathedral and the Cantelupe shrine, Hereford Cathedral (p. 387 J), are beautiful examples of the fine decorative stonework of this period, while the Early English font (p. 422 B), piscina (p. 422 F), sedilia (p. 422 M) and tabernacle (p. 422 J), gable cross (p. 421 B), finial (p. 421 E), boss (p. 421 K), gargoyle (p. 416 H), crocket (p. 416 N, P), and bracket (p. 421 P) show that much careful craftsmanship was lavished on these features. The Psalters, Missals, Books of Hours, and Chronicles are a valuable record of contemporary life in which huntsman, shepherd, fisherman, labourer, scribe, monk, king, knight, and saint all bear their part. The British Museum and the Victoria and Albert Museum contain armour, caskets, pyxes, and triptychs wrought in metals, ivory, and wood, with architectural features freely used in the designs.

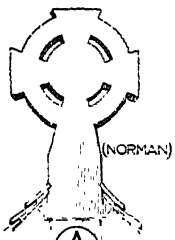
Decorated.—The ball-flower and tablet-flower frequently enrich mouldings, and indeed carving generally became more naturalistic and reproduced the actual forms of ivy, oak, vine-leaves, and even of seaweed (pp. 415, 421 L, Q). Figures in canopied niches were frequently added to exteriors, as at Exeter, and arcading, resembling window tracery, lined the wall surfaces. Stained glass, losing its primitive mosaic character, became translucent in tone and more free in design, and the large windows glowed with luminous coloured pictures of figures in architectural canopies with borders of vine and ivy, such as are seen in York Minster, Tewkesbury Abbey, and Merton College, Oxford.

> "The deep-set windows, stained and traced,
> Would seem slow-flaming crimson fires."

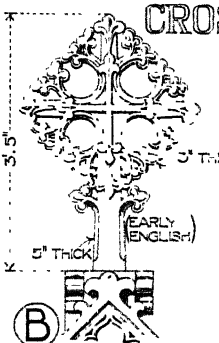
Shrines and tombs in cathedrals and churches (p. 387 G, K, L) are miniature buildings in themselves, with beautiful detail of canopy, crocket (p. 416 Q, R), and pinnacle. Fittings, especially in woodwork, such as pierced screens, bishops' thrones (p. 424 E), carved choir stalls (p. 424 D), pews (p. 424 A), and pulpits, acquired character and importance in the general scheme of internal decoration (pp. 346 B, 348 B). The font (p. 422 C), piscina (p. 422 G), tabernacle (p. 422 L), gargoyles (p. 416 L, M), sedilia (p. 422 N), corbel (p. 421 Q), eagle lecterns (p. 427 E, F), gable cross (p. 421 C), finial (p. 421 F), and boss

CROSSES, FINIALS, BOSSES, CORBELS, ETC.

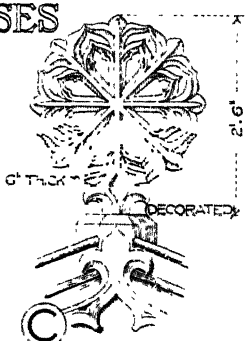
CROSSES



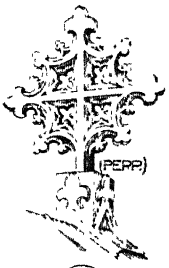
A
S. GERMAIN'S: CORNWALL



B
WALSOKEN · NORFOLK

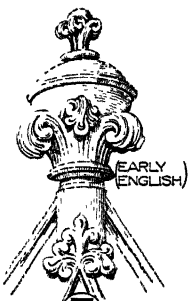


C
HASLINGFIELD: CAMBS

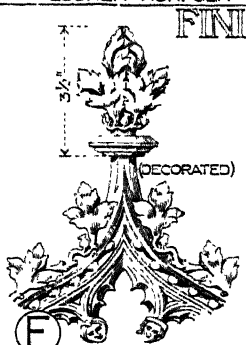


D
TRUNCH · NORFOLK

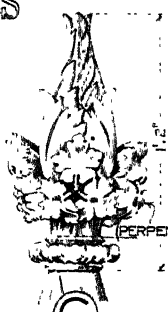
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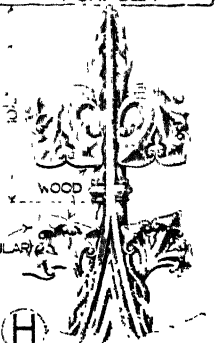
E
LINCOLN CATHL



F
ALTAR SCREEN: BEVERLEY

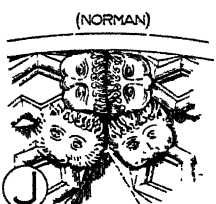


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CHAPTER Hº: WELLS

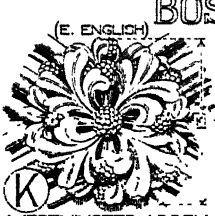


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BOSSES



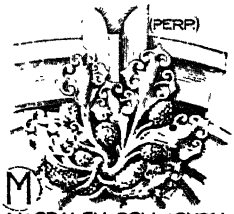
J
KILPECK: HEREFORD



K
WESTMINSTER ABBEY



L
BEVERLEY MINSTER

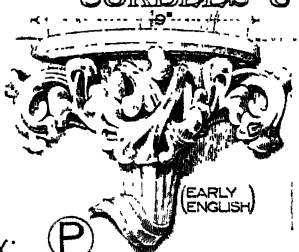


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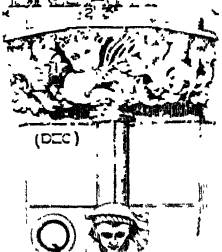
CORBELS & PENDANTS



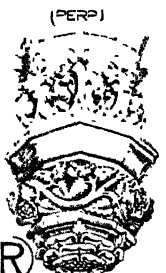
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PRIOR'S DOORWAY: ELY CATHEDRAL



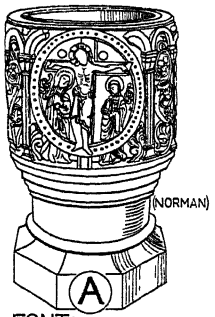
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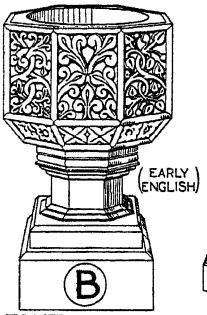
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MAYOR'S CHAPEL: BRISTOL



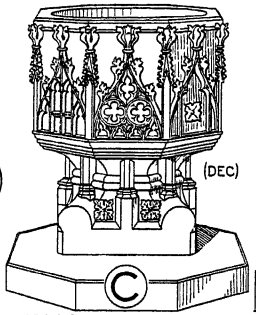
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ALL SAINTS: EVESHAM



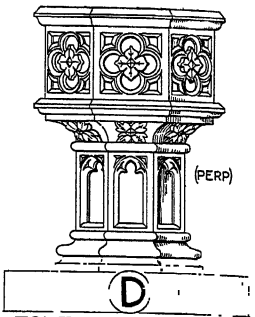
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WARWICKSHIRE



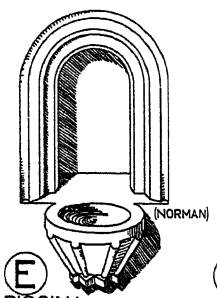
FONT LACKFORD
SUFFOLK



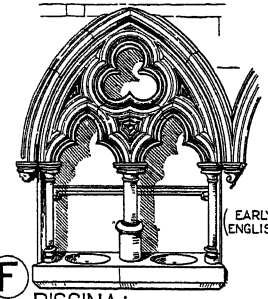
FONT: OFFLEY, HERTS



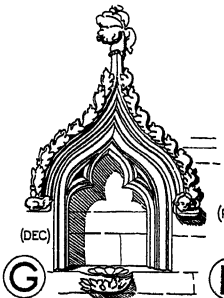
FONT CLYMPING, SUSSEX



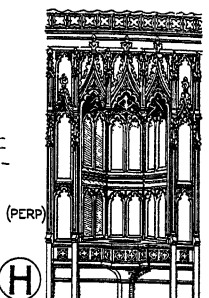
PISCINA: CROWMARSH
OXFORDSHIRE



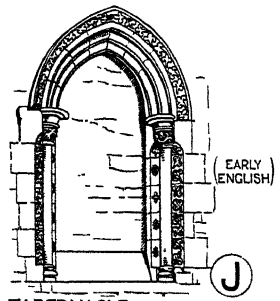
PISCINA: COWLING
SUFFOLK



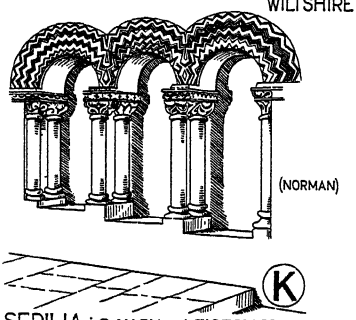
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WILTSHIRE



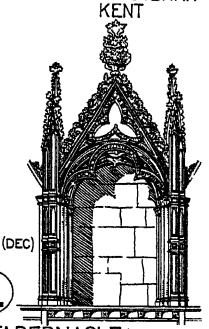
PISCINA COBHAM
KENT



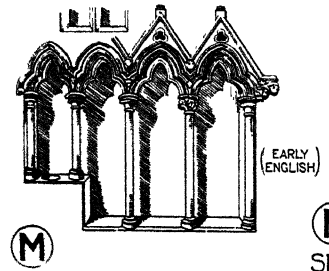
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NORTHANTS.



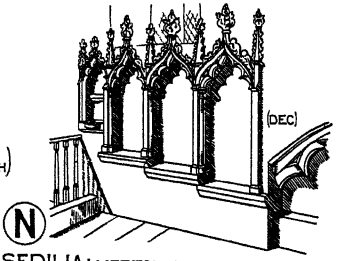
SEDILIA · S. MARY LEICESTER



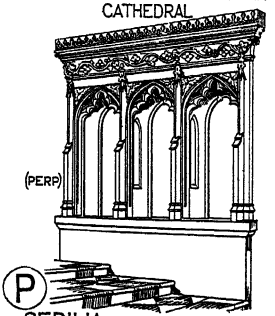
TABERNACLE · EXETER
CATHEDRAL



SEDILIA RUSHDEN, NORTHANTS

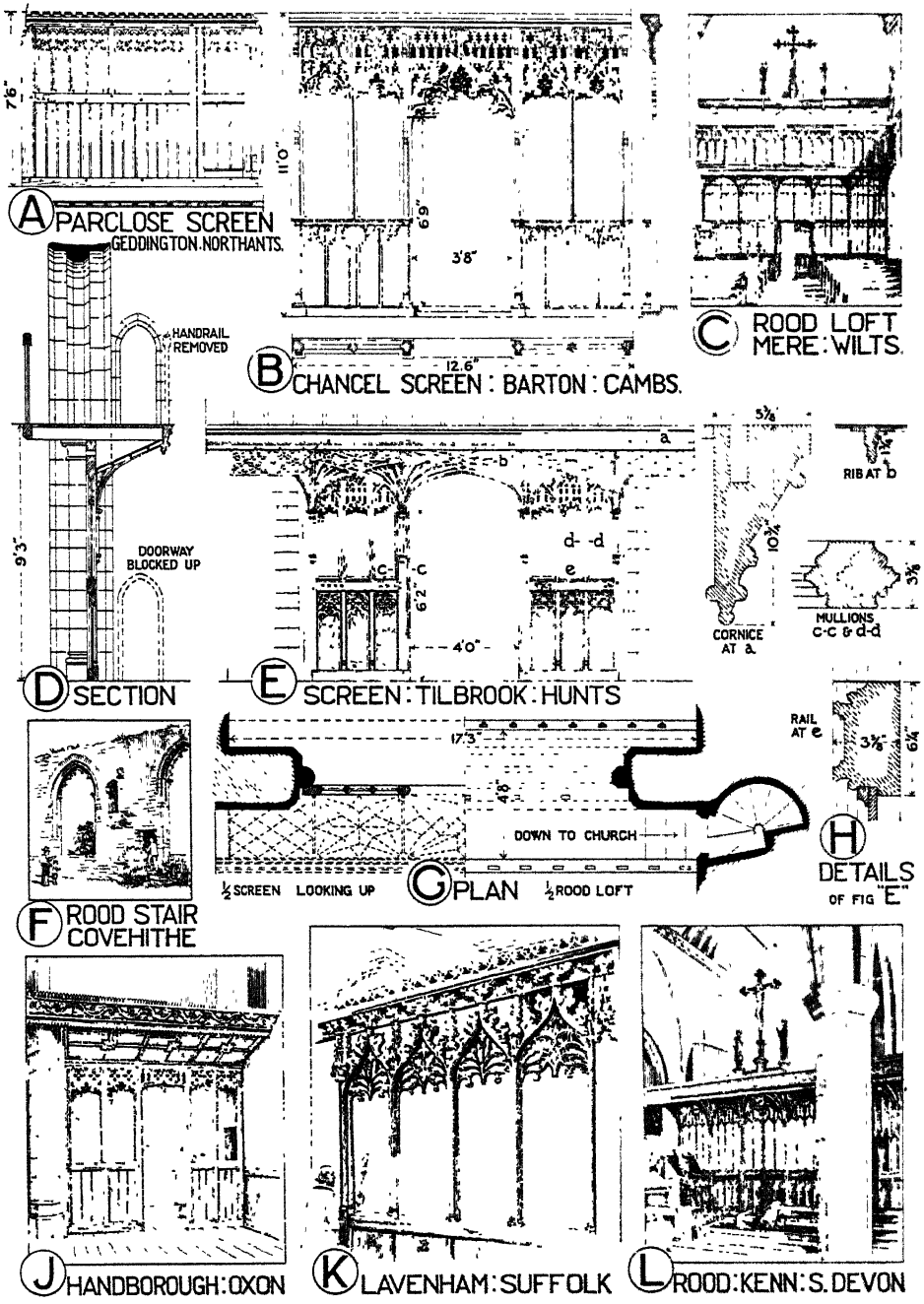


SEDILIA · MERTON COLLEGE OXFORD

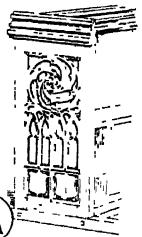


SEDILIA S. MARY OXFORD

SCREENS & ROOD LOFTS



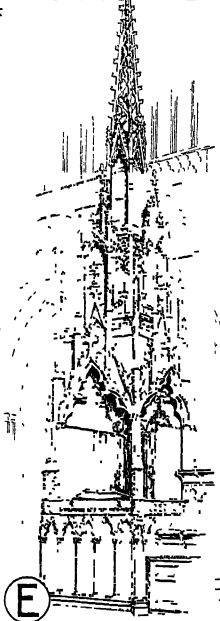
MEDIÆVAL CHURCH FITTINGS



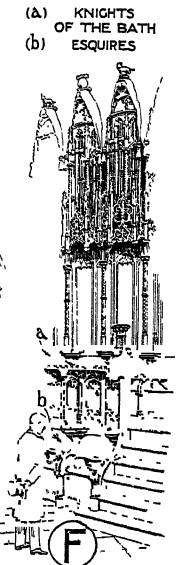
A BENCH-END STEEPLE ASTON



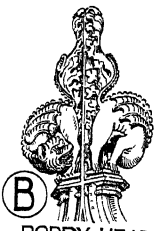
D STALLS YORK MINSTER



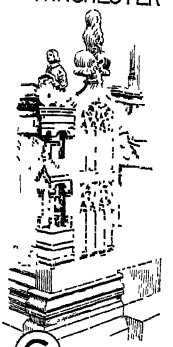
E BISHOP'S THRONE EXETER



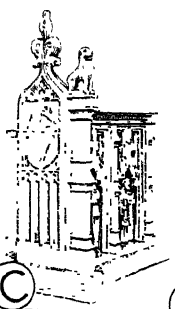
F STALLS-HENRY VII CHAPEL WESTMINSTER



B POPPY-HEAD WINCHESTER



G STALLS BEVERLEY MINSTER



C BENCH-END BLYTHBURGH

MISERICORDS

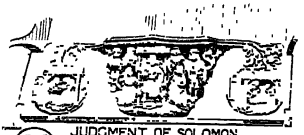


GEESE HANGING THE FOX

H BEVERLEY MINSTER



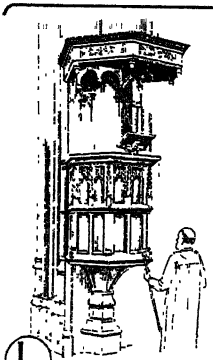
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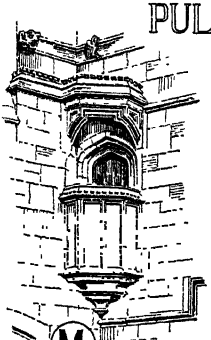
JUDGMENT OF SOLOMON

K HENRY VII CHAPEL WESTMINSTER

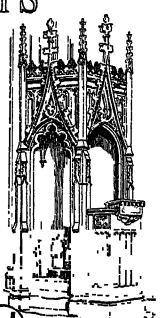
PULPITS



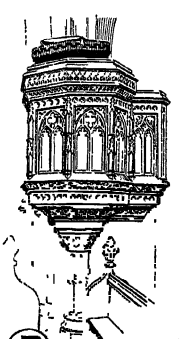
L FOTHERINGAY



M MAGDALEN COLL: OXFD



N ARUNDEL: SUSSEX



P BANWELL: SOMERST

(p. 421 L) well show the supplementary decorative treatment of the period, and the Eleanor Crosses (p. 394 B) are delightful examples of commemorative monuments.

Perpendicular.—Vine leaves and grapes often enrich the mouldings, which also have cornice flowers at intervals (p. 415 U). Carved foliage is both conventional and naturalistic (pp. 413, 415, 416), while the special ornaments of the period are the Tudor rose, the portcullis, and the fleur-de-lis, all of which were used unsparingly, as in Henry the Seventh's Chapel. Figure sculpture takes the form of carved angels and heraldic figures supporting emblems, such as the portcullis, rose, and crown, as in Henry the Seventh's Chapel, and the carved angels on the " Jacob's ladder " at Bath Abbey. Wall arcading was replaced by panelling, which, resembling window tracery, overlaid the wall surfaces and buttresses from floor to vault, as at Gloucester, while miniature battlements decorated window transoms and cornices (pp. 408 M, 423 A). Architectural canopies in stained glass have a mellow golden tinge, produced by silver stain, which well sets off the large single figures in ruby and blue, which are often ranged one above the other and give the solemn effect of—

" Storied windows richly dight
Casting a dim religious light."

Window design became more pictorial, as the use of perspective overcame the difficulties inherent in transparent glass. Heraldic devices of shields with armorial bearings and scroll inscriptions were frequent, as at King's College, Cambridge, Fairford Church, Gloucestershire, and Canterbury Cathedral. Shrines and Chantry Chapels, as at Winchester (p. 352 J) and Canterbury, and reredoses, as at Winchester (p. 352 G), were often delicately modelled miniatures on the design of the larger building, which they adorn. Wooden chancel screens are very general, and were formed of mullions, open tracery, sculptured statues under crocketed canopies crowned with Tudor flower cresting (p. 416 J). Colour was frequently applied to fittings and timber roofs, as in the churches of East Anglia. Choir stalls (p. 424 F) were elaborate and misericords under choir seats were carved with grotesques and delicate foliage (p. 424), while bench-ends were terminated with carved poppy-heads (p. 424 B, C, G). Examples of a Perpendicular font (p. 422 D), piscina (p. 422 H), sedilia (p. 422 P), chancel and rood screens (p. 423), a bench-end (p. 424 C), pulpits (p. 424), rood loft (p. 423 C), parclose screen (p. 423 A), chantry chapels (p. 387 A, C), a gable cross (p. 421 D), crockets (p. 416 S, T), finial (p. 421 G, H), pendant (p. 421 R), and boss (p. 421 M) are given. Metalwork in door fittings, grilles, and in fine brasses was used in profusion with much variety and beauty of design and execution (p. 427).

Tudor.—Tudor ornament began to appear during the late Perpendicular period in church monuments, and also in domestic architecture. The Tudor rose (p. 415 W) enriches mouldings and, with curling vine-leaf and tendril, is frequent in the spandrels of four-centred door-heads. Chantry chapels, as at Worcester (p. 387), were striking features in some of the cathedrals. Sculpture generally betrays Renaissance influence, and the roundels at Hampton Court Palace were actually brought from Italy. Chimney-pieces offered a fine field for the decorative display of carving with heraldic devices, as in the famous chimney-pieces of Tattershall Keep (p. 366 G, J). Woodwork is finely carved, as in the linenfold panels of walls (p. 378 J) and doors, and also of furniture, which now became more

plentiful. Modelled plaster ceilings with moulded ribs give finish to interiors, as at Losely Manor House, Levens Hall, and Hampton Court (p. 378 c). Leadwork also received ornamental treatment, as in the turrets at Hampton Court, and in many a rain-water head (p. 378 G). Wrought-iron door fittings (p. 378 H) and locks are often of great beauty and are architectural in character. Glass, coloured with heraldic devices, was now more largely used in domestic architecture in patterned lead "cames," as in the beautiful windows at Ockwells Manor, Berkshire. Castles of the feudal type, designed for military operations and for defensive purposes, and often as bare of ornament as of comfort, were passing away. The manor houses which sprang up were developed on domestic rather than on military lines, as the fortified stronghold gave way before the dwelling-house. With this change of purpose came a desire for comfort and decoration, and so ornament, which had been the faithful handmaid of ecclesiastical architecture, had a fresh chance of development in the service of domestic architecture. Thus, the tendency of Tudor ornament was largely governed by its incorporation in domestic building. This, together with the influence of the incoming Renaissance, gives it a special character and associates it intimately with the new English homes, which were then rising throughout the country in place of old monastic establishments. Here then, again, we see that ornament adds its peculiar attribute to each period.

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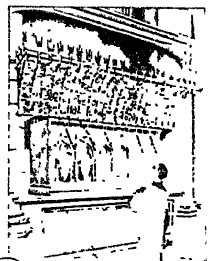
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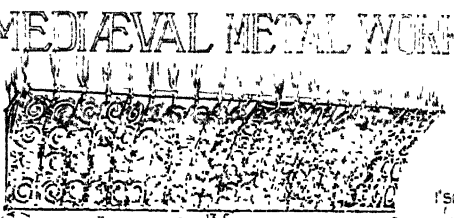
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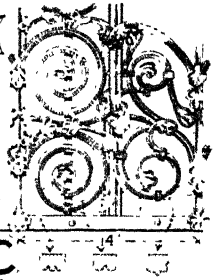
MEDIÆVAL METAL WORK



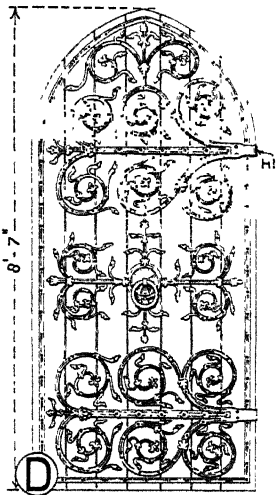
A SKETCH OF GRILLE ON TOMB



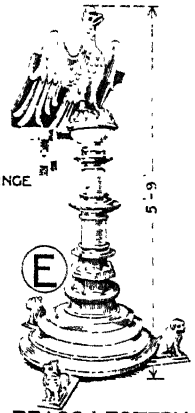
B IRON GRILLE: QUEEN ELEANOR'S TOMB WESTMINSTER ABBEY



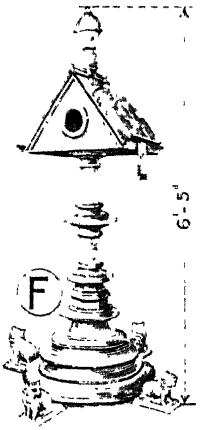
C DETAIL OF GRILLE



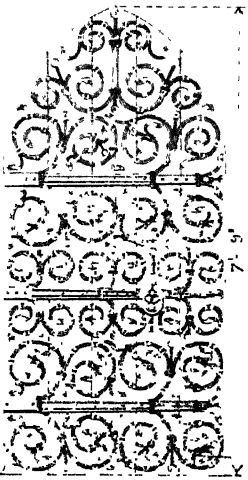
D IRONWORK: S. MARY: NORWICH



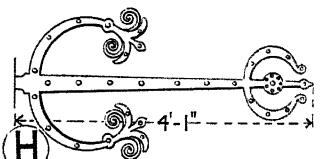
E BRASS LECTERN UPWELL S. PETER NORFOLK



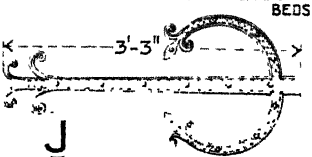
F BRASS LECTERN ----YEOVIL



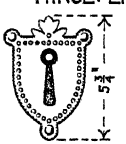
G IRONWORK: EATON BRAY BEDS



H HINGE: ERITH: KENT

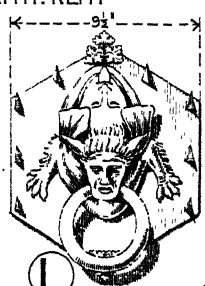


J HINGE: MARGARET RODING ESSEX.





K ESCUTCHEONS N. PETHERTON



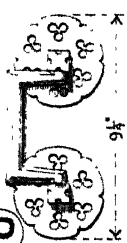
L RING HANDLE: ASHBY S. LEGER.



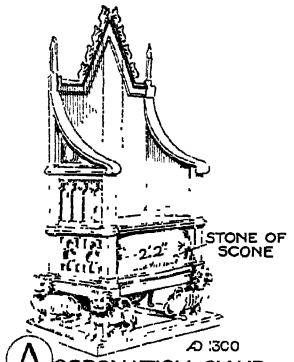
M BRASS COBHAM: KENT SIR R. BRAYBROOK. 1405.



N SANCTUARY KNOCKER DURHAM



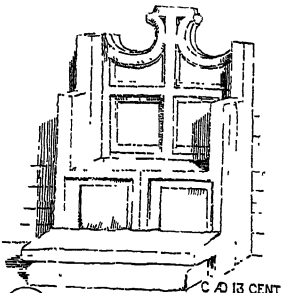
P HANDLE WESTMINSTER ABBEY



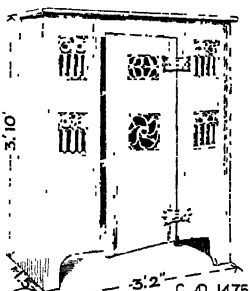
A CORONATION CHAIR
WESTMINSTER ABBEY



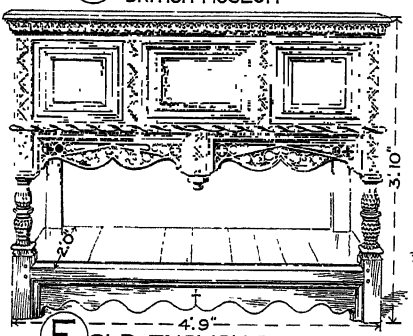
B IVORY TRIPTYCH
BRITISH MUSEUM



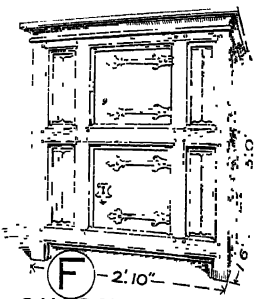
C PATRIARCHAL CHAIR
CANTERBURY



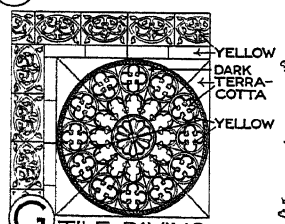
D LIVERY CUPBOARD



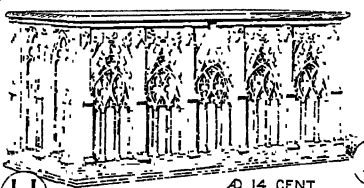
E OLD ENGLISH BUFFET
C. A.D. 1520



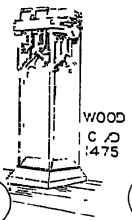
F OAK DOUBLE HUTCH



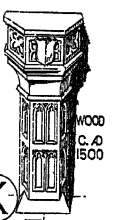
G TILE PAVING
GREAT BEDWIN: WILTS



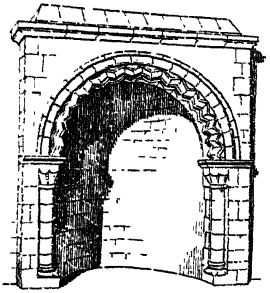
H OAK CHEST: HUTTOFT: LINCS



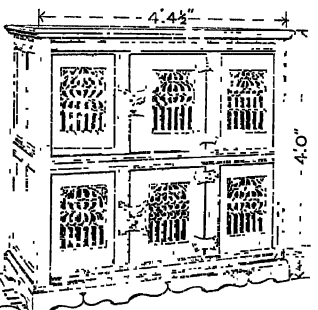
J ALMS BOX
BLYTHBURGH SUFFOLK



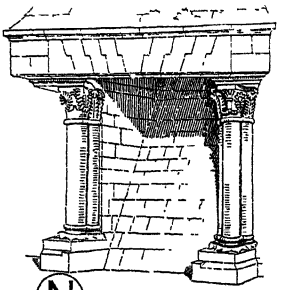
K CREDENCE
FYFIELD: BERKS



L FIRE PLACE
ROCHESTER CASTLE



M OAK GOTHIC CUPBOARD

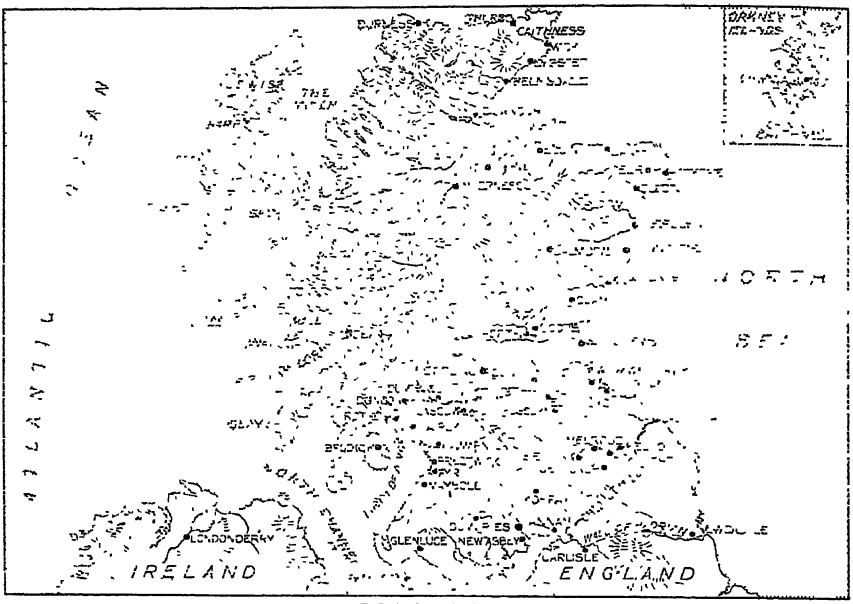


N FIRE PLACE
CONISBOROUGH CASTLE

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SCOTLAND

SCOTTISH ARCHITECTURE

THE architecture of Scotland commences with Lake Dwellings, Mounds, Burghs, and Beehive Huts of the Celtic period, such as those at Lewis (p. 2 D). Some small churches or oratories were founded probably on Irish prototypes.

Mediæval architecture in Scotland followed on much the same lines as in England until the middle of the fifteenth century, when it assumed a more definitely national character. Inspiration was largely drawn from France, with which country there was close political connection. This resulted in a picturesque and interesting development on French lines, especially after Robert Bruce (A.D. 1306–29) secured the independence of Scotland. In Melrose Abbey is seen the influence of French and Spanish art, while in Rosslyn Chapel Portuguese influence is apparent; for it is very similar in detail to the Church of Belem, near Lisbon. Lancet windows either singly or in groups were used long after they had been discontinued in England; while the Flamboyant tracery of French Gothic was preferred to the Perpendicular style of English Gothic.

Glasgow Cathedral (A.D. 1181–1508) (p. 335 D) is the best preserved Gothic edifice in Scotland, and, although of different dates, is very uniform in appearance. It has an internal length of 283 ft., with nave and aisles, choir and aisles, eastern aisle with chapels beyond, and Chapter House and Sacristy. The fine vaulted Crypt (A.D. 1233–58), fashioned in the fall of the ground, encloses the shrine of S. Mungo.

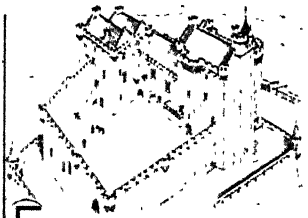
Other important cathedrals are those of Edinburgh, S. Andrews, Kirkwall, Dunblane, one of the finest Mediæval buildings in Scotland, Aberdeen,



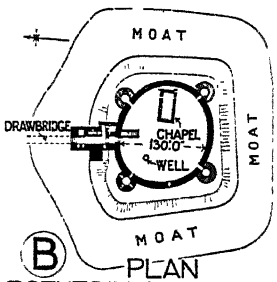
A VIEW FROM N. W.



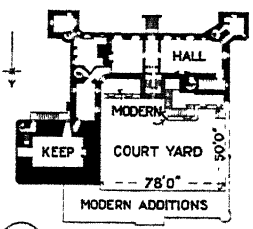
C VIEW FROM N E.



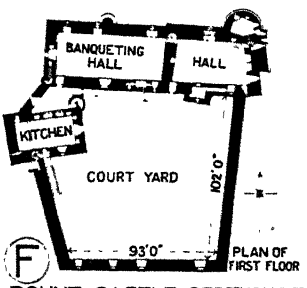
E RESTORED VIEW FROM S.E.



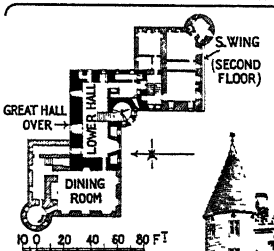
B PLAN
ROTHESAY CASTLE: BUTE



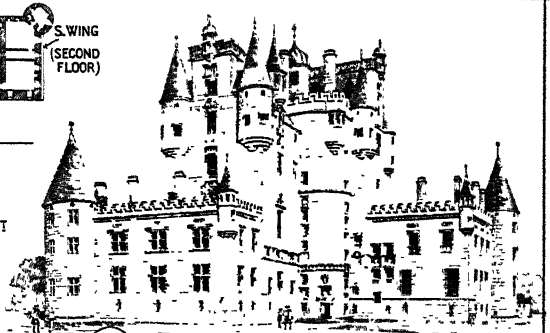
D PLAN OF FIRST FLOOR
DRUM CASTLE: ABERDEENSHIRE



F
DOUNE CASTLE. PERTHSHIRE



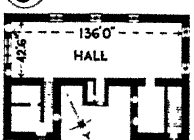
G FIRST FLOOR PLAN



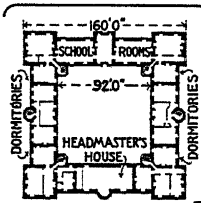
H GLAMIS CASTLE FROM S.W.



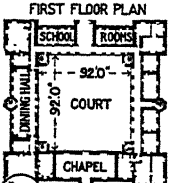
J VIEW FROM N.E



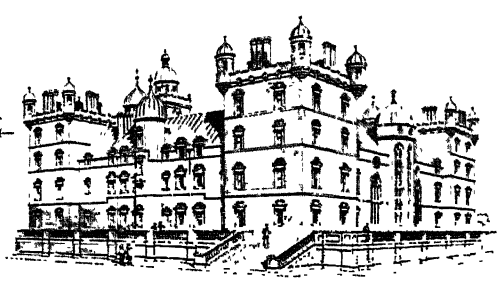
K PLAN. COWANE'S HOSPL: STIRLING



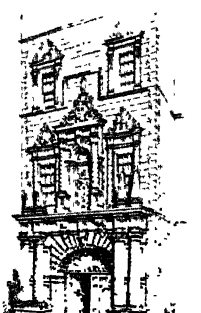
FIRST FLOOR PLAN



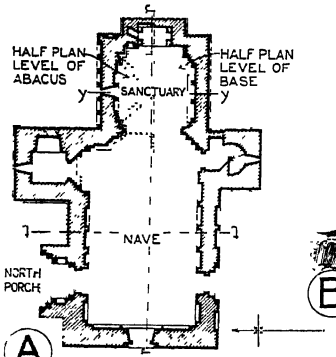
L GROUND PLAN
PLANS



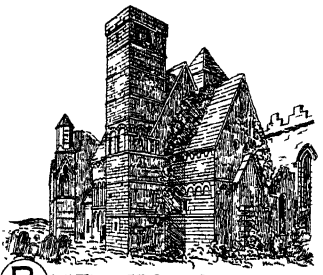
M GEORGE HERIOT'S HOSPITAL
EDINBURGH: FROM S.W.



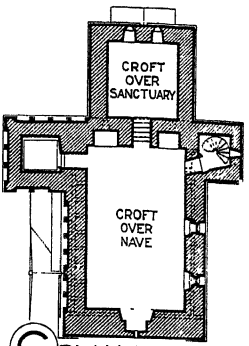
N ENTRANCE. N. SIDE



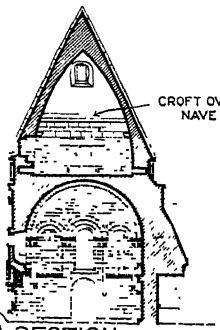
A PLAN



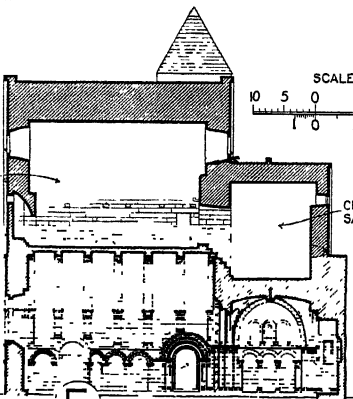
B VIEW FROM S E



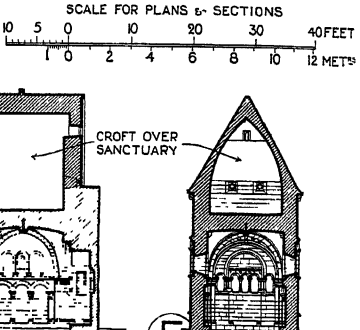
C PLAN OF CROFTS



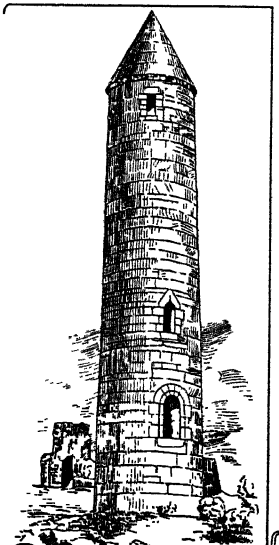
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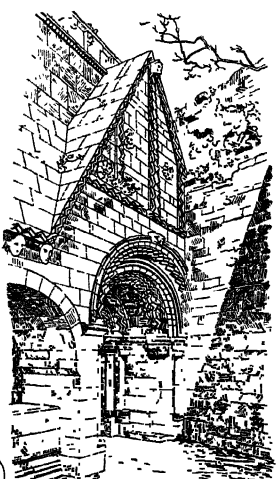
E SECTION r-r



F SECTION y-y

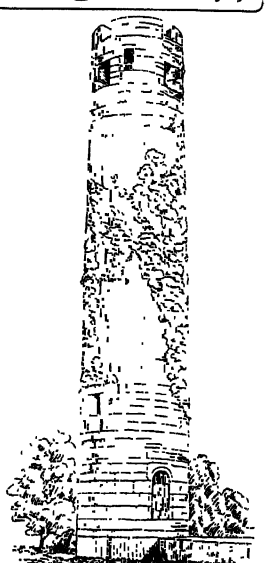


G TOWER: DEVENISH



H VIEW OF NORTH PORCH

CORMAC'S CHAPL: CASHEL



J TOWER: KILREE KILKENNY

and Elgin ; while the Abbeys of Kelso, Melrose, Dunfermline, Holyrood, and Dryburgh are the best known. **Dalmeny Church** and **Leuchars Church** are amongst the most notable of many parish churches.

Pele towers or bastles, with projecting angle turrets, consisted of single rooms one over the other accessible by " turnpike " or winding stairs. The " corbie " or " crow-stepped " gable was used in preference to the straight-sided gable of England. In vaulted roofs a continuous barrel vault with surface ribs was occasionally employed.

Scotland is specially rich in Gothic castles and mansions which possess distinctive character, and in which native stone was almost universally employed.

Glamis Castle (p. 431 G, H) has many characteristic features, such as the grouped buildings at various angles, and the vast height of bare walls combined with picturesque circular turrets. Glamis Castle is the traditional scene of the murder of Duncan by Macbeth, referred to by Shakespeare :

> " This castle hath a pleasant seat ; the air
> Nimbly and sweetly recommends itself
> Unto our gentle senses."

Castles and mansions in Scotland from the thirteenth to the seventeenth century have a national character, and are divided by MacGibbon and Ross into four periods. ***First period*** (thirteenth century) : castles were erected on the Norman model with lofty walls of *enceinte,* usually of the plainest description, and with towers to defend the curtain walls, as at **Rothesay** (p. 431 A, B). ***Second period*** (fourteenth century) : castles have a tower similar to the Norman keep with a " barnikin " or courtyard surrounded by a wall which was less extensive than in the thirteenth century. The L-plan, formed by the addition of a wing to one angle of the keep, was adopted, as at **Glamis** (p. 431 G), and ornamental features were rare. ***Third period*** (A.D. 1400–1542) : the keep was still used together with the L-plan, and a tower containing a stair was inserted in the angle (p. 431 G, H). Large castles display an increase in ornament, and the buildings round a wall of *enceinte* formed a central courtyard. ***Fourth period*** (A.D. 1542–1700) : traditional plans were adhered to—the courtyard for larger buildings and the keep with L-, Z-, T-, or E-plans for smaller buildings, as at Stirling (p. 431 K). Old defensive forms such as corbellings, angle turrets with conical roofs, and battlements became mere ornaments, while dormer windows and clustered chimneys reflect Renaissance influence. **George Heriot's Hospital, Edinburgh** (p. 431 L, M, N), in the early Renaissance style, is a fine example of the Fourth period, both in dignity of plan and beauty of detail, notably in the entrance gateway with its subtle Renaissance treatment.

A series of plans and sketches of different types of buildings, showing the national character of Scottish architecture, is given on p. 431.

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IRISH ARCHITECTURE

THE architecture of Ireland can be divided into three main periods—Celtic, Mediæval, and Renaissance—and in each there are a number of interesting buildings of distinctive character.

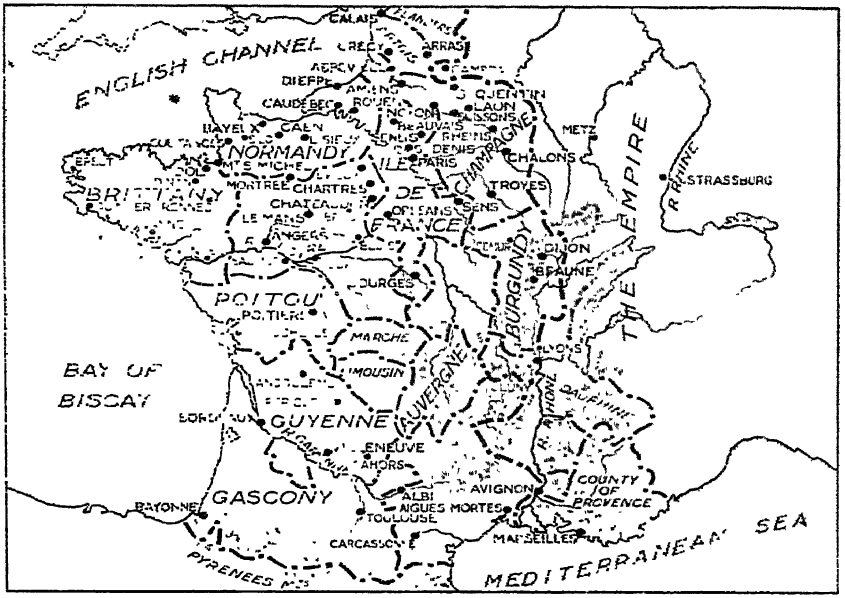
Celtic Architecture.—Early Christian buildings in Ireland are archaic, and existing remains indicate that the building monks largely followed types of pre-Christian times. The chief interest lies in Celtic Architecture from the sixth century to the English Conquest, A.D. 1169. The Celtic or "Runic" cross is a modification of the Latin Cross and is often capped with a sloping roof to throw off the rain, as in the crosses of Durrow and Monasterboice (A.D. 923). They are divided into panels containing carved representations of Biblical episodes, the unending knot, and much other symbolism. Early churches were extremely small and appear to have been principally used as oratories for priests, with small square chancels attached. The naves have barrel vaults surmounted by an "overcroft" covered by a steep roof of stone, as at **Cormac's Chapel, Cashel** (A.D. 1127–34) (p. 432), probably the finest in Ireland, and S. Kevin's Kitchen, Glendalough. Windows appear to have been unglazed in these primitive churches. There were also monastic establishments, and Prof. Stokes points out that there is a group of seven small churches at Inchleraun similar to some in Asia Minor. The monastic cells at the Skelligs are of beehive form, with domed stone roofs in horizontal courses, as in the Treasury of Atreus, Mycenæ (p. 70 A). Round towers, which are generally detached, have been a subject of much controversy, but it is now generally considered that they were ecclesiastical in origin and were built between A.D. 890 and 1238. They were used as treasure-houses, refuges, or bell towers, and for displaying lamps at night. The entrance doorway was several feet from the ground, and the towers, which taper slightly towards the summit, are crowned, as in the **Tower, Devenish** (p. 432 G), with a conical roof, or, as at the **Tower, Kilree** (p. 432 J), with a battlemented parapet.

Mediæval Architecture.—Within the English domain in Ireland the influence of Continental art was felt during the Middle Ages, but few monuments of importance were erected. The Cathedrals of **Dublin** (p. 335 A), **Kildare,** and **Cashel** are the most important. The absence of parish churches is remarkable, while those of monasteries and friaries (principally Franciscan) are small and usually have a nave and choir—probably once divided by a wooden screen—transept and southern aisle, cloisters, and a tower, often added in the fifteenth century. The best known are those at Cashel, Kilconnel, and Muckross.

The earlier castles of the Irish chieftains are an interesting study, but owing to the disturbances in Elizabethan times there is little domestic architecture left of this period. Irish architecture of the Renaissance period is included with English architecture of that period.

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FRANCE IN THE MEDIÆVAL PERIOD

FRENCH GOTHIC

(See p. 270 for French Romanesque.)

1. INFLUENCES

i. **Geographical.**—France, on the western confines of Europe, may be considered, from an architectural standpoint, as divided into two parts by the River Loire. With the Franks on the north and the Romance races on the south, architecture was influenced not only by geographical position, but also by racial differences. The buildings of old Roman settlers in Provence and along the fertile Rhône valley not only determined the character of Romanesque in this district (p. 270), but also exercised an influence over the Gothic which followed. In the well-defined valley of the Garonne, which had been a trade-route from Marseilles to Bordeaux for merchants from the East, it is natural that there should be traces of Byzantine traditions, even as late as the Gothic period. The north of France, on the other hand, had been exposed to incursions of Northmen, and this element left an impress on Gothic architecture there. The " Ile de France " or Royal Domain, with Paris and the surrounding country, became, as the headquarters of the kings of France, the district where the great French Gothic cathedrals were first built in rapid succession, as at Paris, Bourges, Chartres, Laon, Le Mans, Amiens, and Rheims.

ii. **Geological.**—The excellent building stone of France continued as abundant as in the Romanesque period (p. 270), and that found near Caen

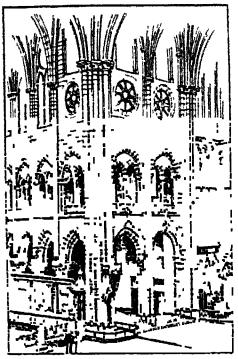
aided in the development of the northern Gothic style. In the mountainous districts of Auvergne the use of volcanic stone gave a rich chromatic appearance to the buildings; while in the extreme south good local stone helped to continue the Classical traditions which had been handed down through the Romanesque period (p. 277).

iii. Climatic.—This influence remained the same as during the previous period (p. 271), and all that it is necessary to note here is that the comparatively dull climate of the north permitted, and even invited, the extension of traceried windows to light the vast interiors.

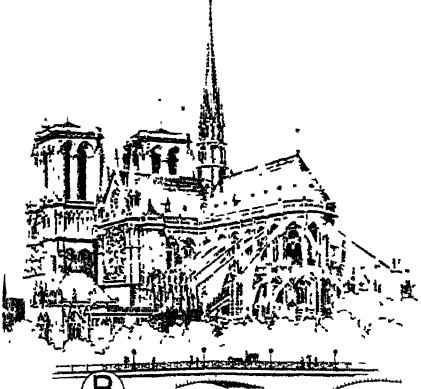
iv. Religious.—The religious zeal of the thirteenth century, when Christianity was united against the Saracens, was especially manifested in France in the Third Crusade (A.D. 1189) under Philip Augustus, the Seventh Crusade (A.D. 1248) under S. Louis, and the Eighth Crusade (A.D. 1270), and was marked by the erection of many grand cathedrals which were the work of the laity and the free communes, in contrast with the monastic church-building of the Romanesque period, such as that of Abbé Suger, minister of Louis VII (A.D. 1137–80). The clergy, as a corporate body, had reached the summit of their power, largely due to their championship of justice and their adhesion to the royal cause. The papacy, in spite of vicissitudes, was undoubtedly powerful in France during the seventy years (A.D. 1307–77) of the residence of the Popes in their fortress-palace at Avignon. The religious spirit of the age found an outlet in the inauguration of cults of special saints in different localities, and this brought fame to certain shrines which thus acquired wealth and importance as pilgrimage centres, and this is reflected in the beautiful architecture and decoration of the churches. The active zeal with which urban populations set about building cathedrals produced almost miraculously rapid results, and so much did this outburst of building activity transform the face of France, that it has been compared by Viollet-le-Duc to the commercial movement which, in later times, covered Europe with railways. A crusade against the heretical Albigenses (see below) of Albi, Toulouse, and Carcassonne was preached by the Cistercians in A.D. 1209, and relentless war was waged during the thirteenth century, under papal orders, by the King of France and the nobles of the north against the south, and ended in the destruction of the famous culture of Provence, the humiliation of the princes of the south, with the ultimate extermination of the heresy.

v. Social.—Before the establishment of the Kingdom of France, when Hugh Capet became " King of the French " (A.D. 987), the country had been peopled by races differing in origin who were at war with one another and who perpetuated differences in government, customs, and language. The consequent diversity of influences was not without its effect both on Romanesque (p. 271) and on Gothic architecture. The period during which Gothic architecture in France had its growth was marked by all the restlessness that characterises the style, which is instinct with the intellectual and spiritual aspirations of that age. The feudal system was the root from which sprang the tyranny of the lords over the common people as well as the revolt of the same lords against the kingly power; when kings were strong, the nobles were kept in check and the people prospered, and thus kings and people naturally fostered the communes against the nobles. The twelfth century was remarkable for the continuous struggle of the communes to assert their freedom. During the reign of Philip IV (A.D. 1285–1314) the Parlement de Paris became the principal law court, and the constitutional power of the central authority grew at the expense of feudal and ecclesiastical

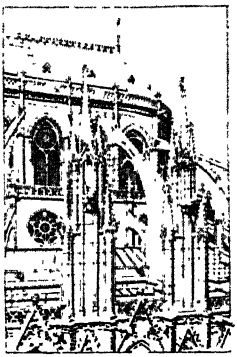
NOTRE DAME : PARIS



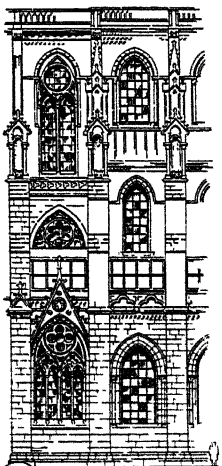
A ANGLE OF CHOIR & S. TRANSEPT



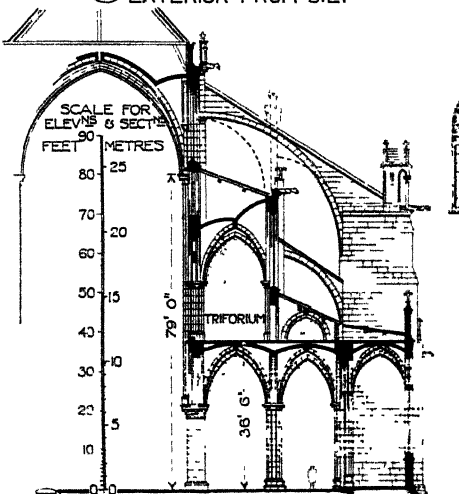
B EXTERIOR FROM S.E.



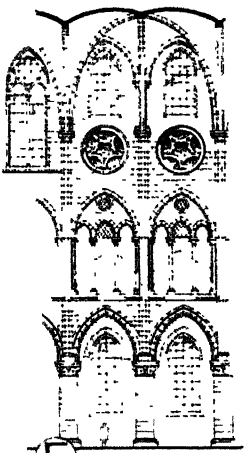
C BUTTRESSES & PINNACLES: CHEVET



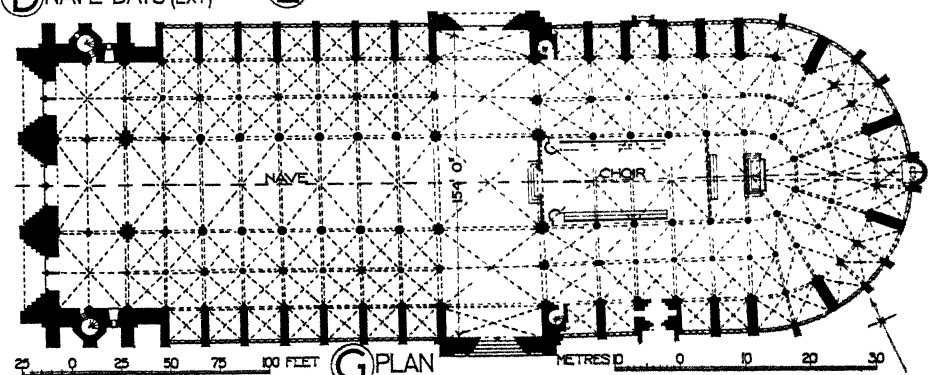
D NAVE BAYS (EXT)



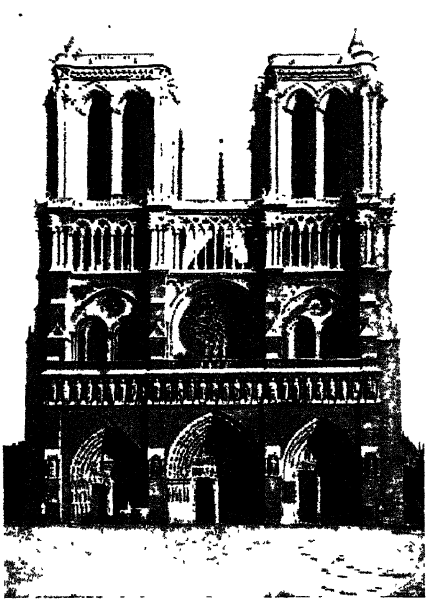
E HALF TRANSVERSE SECTION



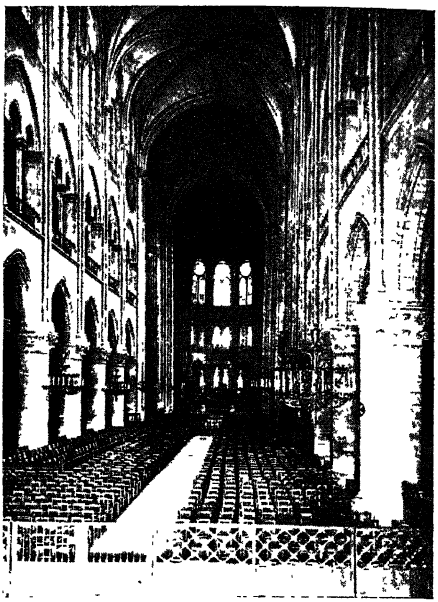
F NAVE BAYS (INT.)



G PLAN



A. West Façade



B. Nave looking E.

Notre Dame, Paris



C. Le Mans Cathedral

powers. Vast stretches of fertile country were brought under cultivation for corn, vine, and olive, and these and other industries were carried on by a thrifty, sturdy population which worked, much as in England, for the feudal lord of château or manoir. Though the Black Death (A.D. 1347–49) swept off a large part of the population and inevitably retarded progress in architecture, the richness of the soil still continued to supply the prosperity which, on the secular side, built the world-famous châteaux of France and the hôtels de ville of the manufacturing towns, such as Arras and Rouen, while on the ecclesiastical side a powerful and religious laity erected, with their own funds, and often with their own hands, that wonderful series of cathedrals which are at once the marvel and the glory of France.

vi. Historical.—Philip Augustus (A.D. 1180–1223), after declaring King John of England to have forfeited all the fiefs he held of the French crown, proceeded to conquer Normandy and the other English possessions, with the exception of Aquitaine. Philip next defeated the combined English, German, and Flemish forces at Bovines (A.D. 1214), and it was in the reign of this strong monarch that a number of French cathedrals were commenced. The power of France was so predominant that the English barons were induced to offer the crown of England to Philip's eldest son, Louis. Louis IX (S. Louis) (A.D. 1226–70) further increased the power of the Crown, but died at Tunis, when setting out on the eighth or last Crusade. The overthrow of the independent counts of Toulouse by Louis IX, during the religious wars against the Albigenses, so extended the Kingdom of France that she obtained a triple sea-board on the Mediterranean, the Atlantic, and the English Channel, and this consolidation of the French Kingdom, by which the different nationalities were gradually absorbed under one king, corresponds with the great cathedral-building epoch of the thirteenth century.

Philip VI (A.D. 1328–50) defeated the Flemings at Cassel, in A.D. 1337. The Hundred Years' War with England began in consequence of the claims which arose from the marriage of Eleanor of Aquitaine with Henry II of England, and in A.D. 1346 the Battle of Crecy was won by the English. The French were again defeated by the English at Poitiers in A.D. 1356. Henry V of England defeated the French at Agincourt (A.D. 1415) and occupied Paris (A.D. 1421). During the reign of Charles VII (A.D. 1422–61) there was a great outburst of national sentiment when Joan of Arc raised the Siege of Orleans (A.D. 1429) and was burnt at Rouen as a witch by the English. In A.D. 1453 the English were expelled from the whole of France except Calais, thus terminating the Hundred Years' War. Louis XI (A.D. 1461–83) inaugurated reforms, strengthened the central power, and worked for the unity of France by annexing Burgundy, Artois, and Provence. Charles VIII (A.D. 1483–98), by his marriage with Anne of Brittany, united that province to the French crown. Thus the close of the Mediæval period marks a united France, free from foreign invasion.

2. ARCHITECTURAL CHARACTER

The character and principles of Gothic architecture generally must be borne in mind in considering its developments in any particular country (p. 300). The main idea or prevailing principle of Gothic architecture in northern France was the same as in other parts of Europe, while in the south the strong Roman traditions influenced the new style, which in fact had not the same scope as in the north, owing to the great building activity of the

previous Romanesque period. The vertical and aspiring tendency was accentuated in the north by lofty vaults with high-pitched roofs, western towers, tapering spires, pinnacles, flying buttresses, and tall traceried windows, and all these features show the experimental treatment of thrust and counterthrust described in detail under Gothic architecture in Europe (p. 306). It should be noted that the style started some half-century earlier in France than in England.

The Gothic style or " Style Ogivale," as it is called in France, lasted approximately from A.D. 1150 to A.D. 1500, and is divided by M. de Caumont into : (1) *Primaire* (twelfth century) or " Gothique à Lancettes," a period distinguished by pointed arches and geometric traceried windows, and the transition from the Romanesque began first in the Ile de France at S. Denis (A.D. 1132–44) (p. 280), Sens (A.D. 1143), Senlis (A.D. 1150), and Noyon (A.D. 1150). (2) *Secondaire* (thirteenth century) or " Rayonnant," a period characterised by circular windows with wheel tracery, as at Rheims, Amiens, and Bourges. (3) *Tertiaire* (fourteenth and fifteenth centuries) or " Flamboyant," from the nature of the flame-like or free-flowing window tracery, as at S. Ouen, Rouen, S. Jacques, Dieppe, Albi, and Caudebec Cathedrals.

3. EXAMPLES

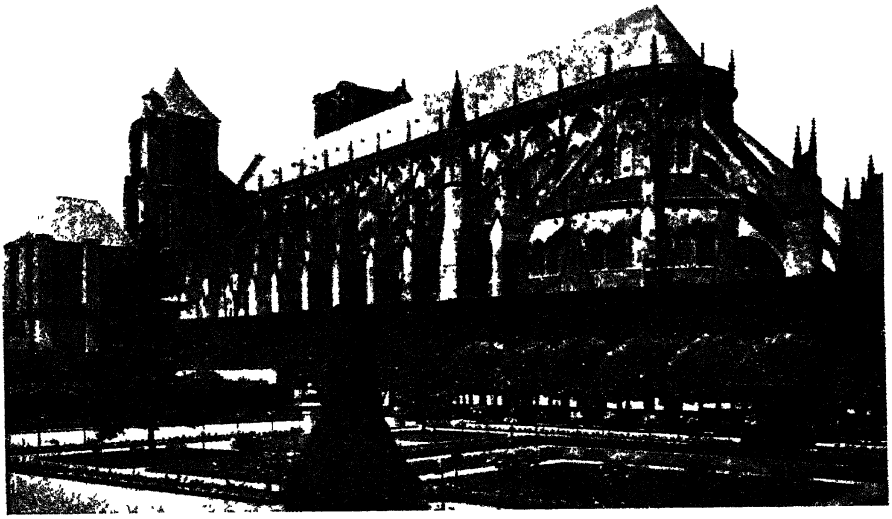
CATHEDRALS AND CHURCHES

The unique position occupied by cathedrals in the general social and civic life of Mediæval times, which is nowhere more pronounced than in France, has been described in the chapter on Gothic architecture in Europe (p. 307). It is important here to remember that the original use and intention of these national monuments was so different from their modern function, which has become purely religious and ecclesiastical, that it is impossible for the reader to appreciate their meaning and value without bearing in mind this wider aspect of old French cathedrals at the time of their building, when there were practically no other public meeting-places. French cathedrals, about 150 in number, were erected in the first half of the thirteenth century out of funds provided chiefly by the laity, and as they did not originate as part of monastic establishments they differ considerably from most English cathedrals in purpose and consequently in plan and design (p. 457). The situation and surroundings of the cathedrals of France also form a marked contrast with those of England ; for French cathedrals were a part of the life of the townspeople and jostled their houses shoulder to shoulder, and were not, as they generally were in England, set apart in a secluded close (p. 309). Browning refers to that—

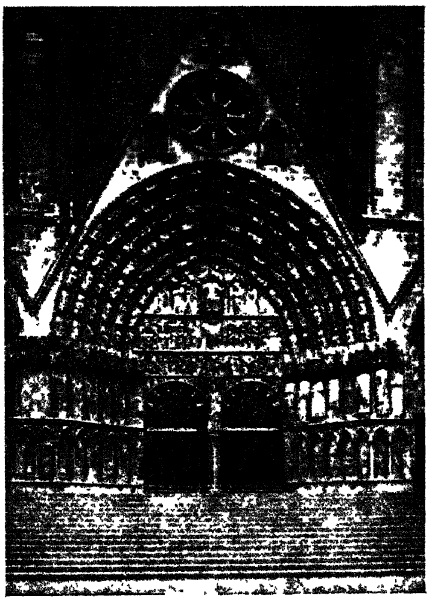
> " Grim town,
> Whose cramp'd, ill-featured streets huddled about
> The minster for protection, never out
> Of its black belfry's shade and its bells' roar."

Furthermore, these national churches, by means of the painted glass of the interior and the statuary of the exterior, served the citizens as an illustrated Bible when few could read, as has been already described under Gothic architecture in Europe (p. 307).

Notre Dame, Paris (A.D. 1163–1235) (pp. 304 A, 437, 438 A, B, 461 C, E, F), one of the oldest of French Gothic cathedrals, was begun by Bishop Maurice de Sully. The plan, which either by accident or intention is on a bent axial



A. Bourges Cathedral

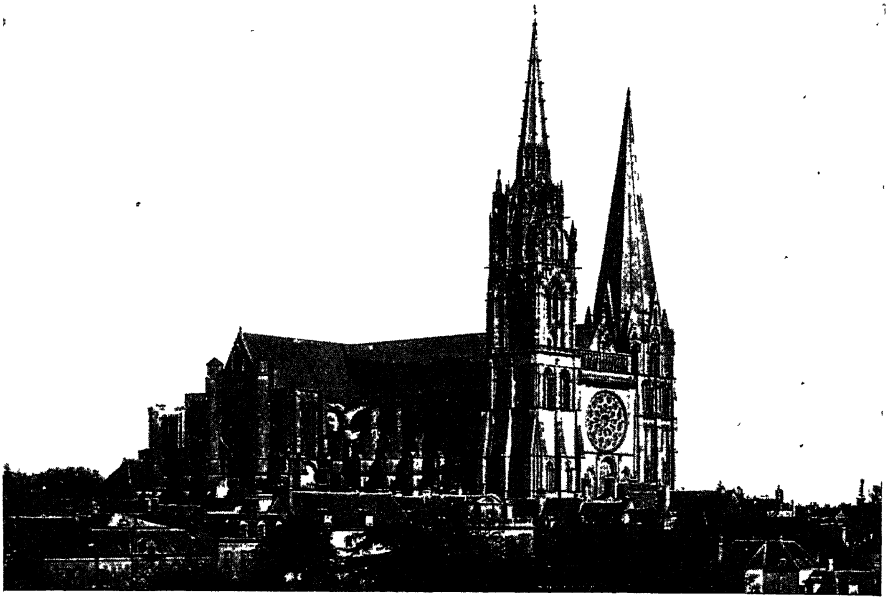


B. West Doorway



C. Interior looking E.

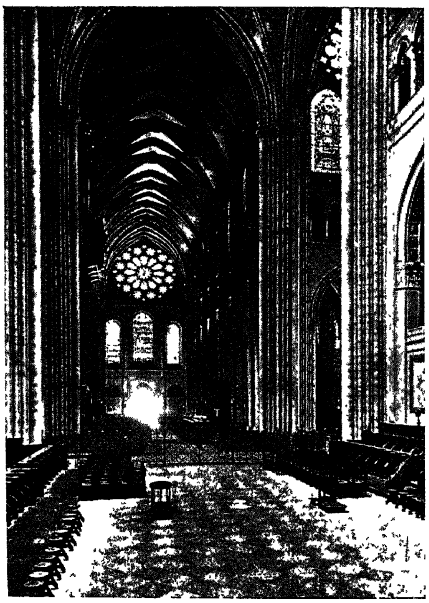
Bourges Cathedral



A. Chartres Cathedral from N.W.



B. Interior looking E.



C. Interior looking W.

Chartres Cathedral

line, is typical, has wide nave and double aisles, transepts of small projection practically in a line with the aisles, and a notable chevet, the earliest of its kind, with double aisles and surrounding chapels between the buttresses. The choir, transepts, and two bays of the nave were completed in A.D. 1196, while the nave was completed in A.D. 1208 when the west façade was started. The impressive, though sombre interior has a nave arcade with cylindrical columns and Corinthianesque capitals carrying pointed arches and shafts to support the ribs of the lofty sexpartite vaulting. The high triforium was surmounted by an upper triforium with circular windows, which were removed in order to introduce taller clear-story windows, but the circular windows next the crossing were reinstated by Viollet-le-Duc (p. 437 A). The wide-spreading western façade (p. 438 A) is probably the finest and most characteristic in France, and served as a model for many later churches. It has three deeply recessed portals with successive encircling tiers of statued niches, and the central doorway is divided by a pillar with a statue of Christ, while above and across this stretches a band of statues of the kings of France. This is surmounted by a central wheel window of great beauty, 42 ft. in diameter, flanked by high coupled windows, over which again a pierced arcaded screen stretches across the façade in front of the nave roof and connecting the two western towers, which have high pointed louvred openings. It is a façade of distinctly harmonious composition and peculiarly suitable to the flat island site from which it rises alone in its impressiveness, without aid from surroundings and position; although it has lost some dignity by the removal of the flight of steps which formed a base. The lateral façades are unimposing by reason of the chapels, wedged in between the buttresses (A.D. 1296), which obscure the original design. The east end, however, presents a fairylike appearance with slender flying buttresses and chevet chapels which, with the gabled transepts and delicate soaring flèche, backed by the western towers, form one of the most striking of cathedral groups (p. 437).

Laon Cathedral (A.D. 1160–1205), a Latin cross in plan, was rebuilt in the early French Gothic style. The nave has an arcade of circular columns with varied Corinthianesque capitals and square abaci to carry pointed arches and shafts to support the ribs of the sexpartite vaulting. The triforium gallery has a high, slightly pointed enclosing arch over two smaller pointed arches resting on a central column; above this and under the clear-story windows is a second triforium gallery, as at Noyon, thus dividing the nave into four storeys instead of the usual three. The boldly projecting transepts have later two-storeyed chapels, outside the original plan (p. 461 G). The sanctuary is peculiar in being rectangular as in England, instead of apsidal, due to the influence of an English bishop who held the see in the twelfth century. The great west façade is an architectural masterpiece, with three boldly projecting porches, emphasised by gables and turrets and a central rose window surmounted by blind arcading. Two open traceried towers, square below and octagonal above, form a setting for the so-called miraculous oxen, said to have carted the building stone up the rocky rampart on which stands the great cathedral, which reflects in its style the independent spirit of the citizens. If completed, it would have been a still more striking composition, with two western towers, two towers over each transept, and a central tower—a seven-towered building.

Soissons Cathedral (A.D. 1160–1212), the church of a royal abbey of monks and nuns of high degree, is fully developed Early Gothic, even in the oldest

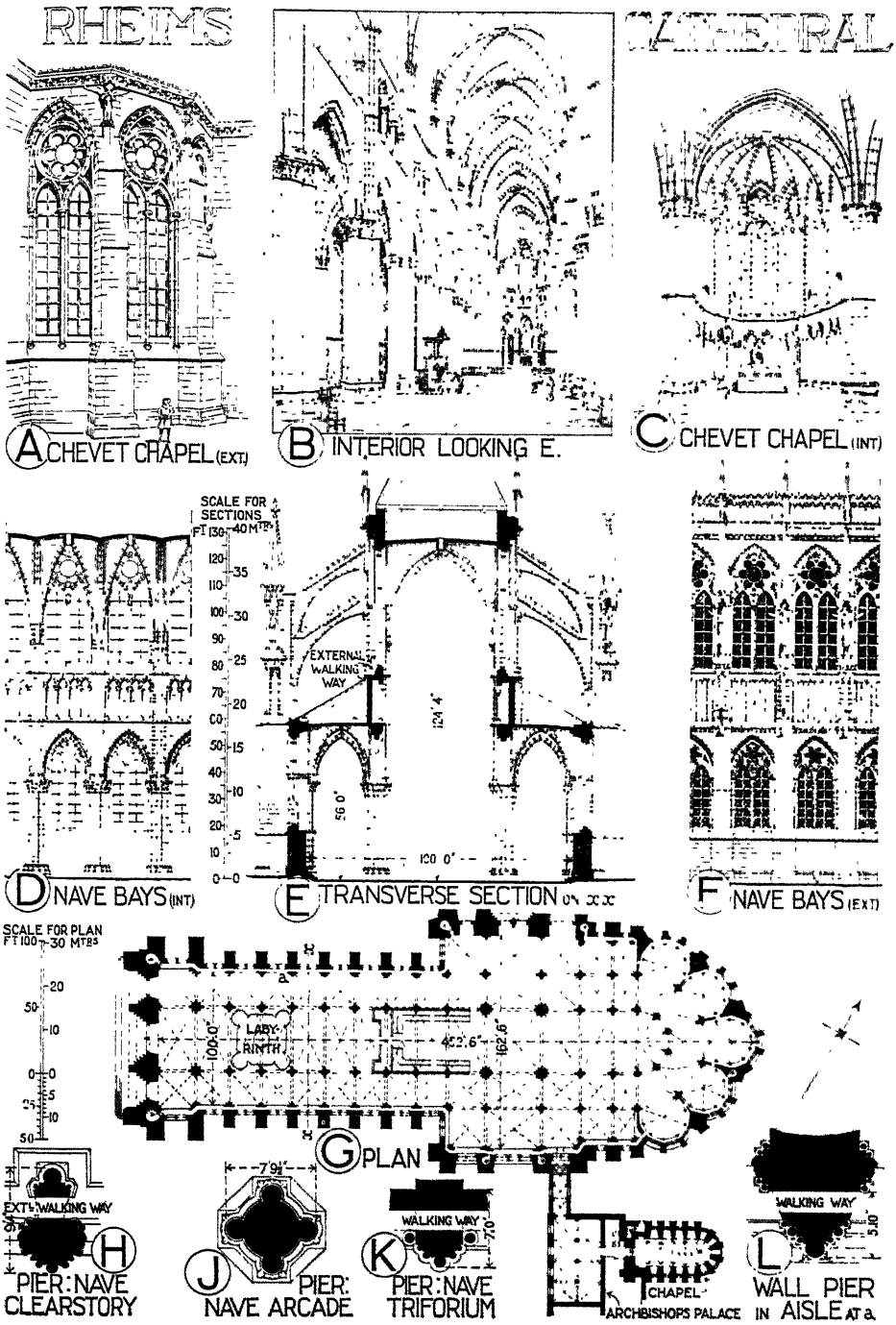
part of the church, viz. the south transept, with apsidal end, clustered columns, narrow pointed arches and shafts which support the vaulting ribs, while the interior is divided into four storeys by the additional triforium.

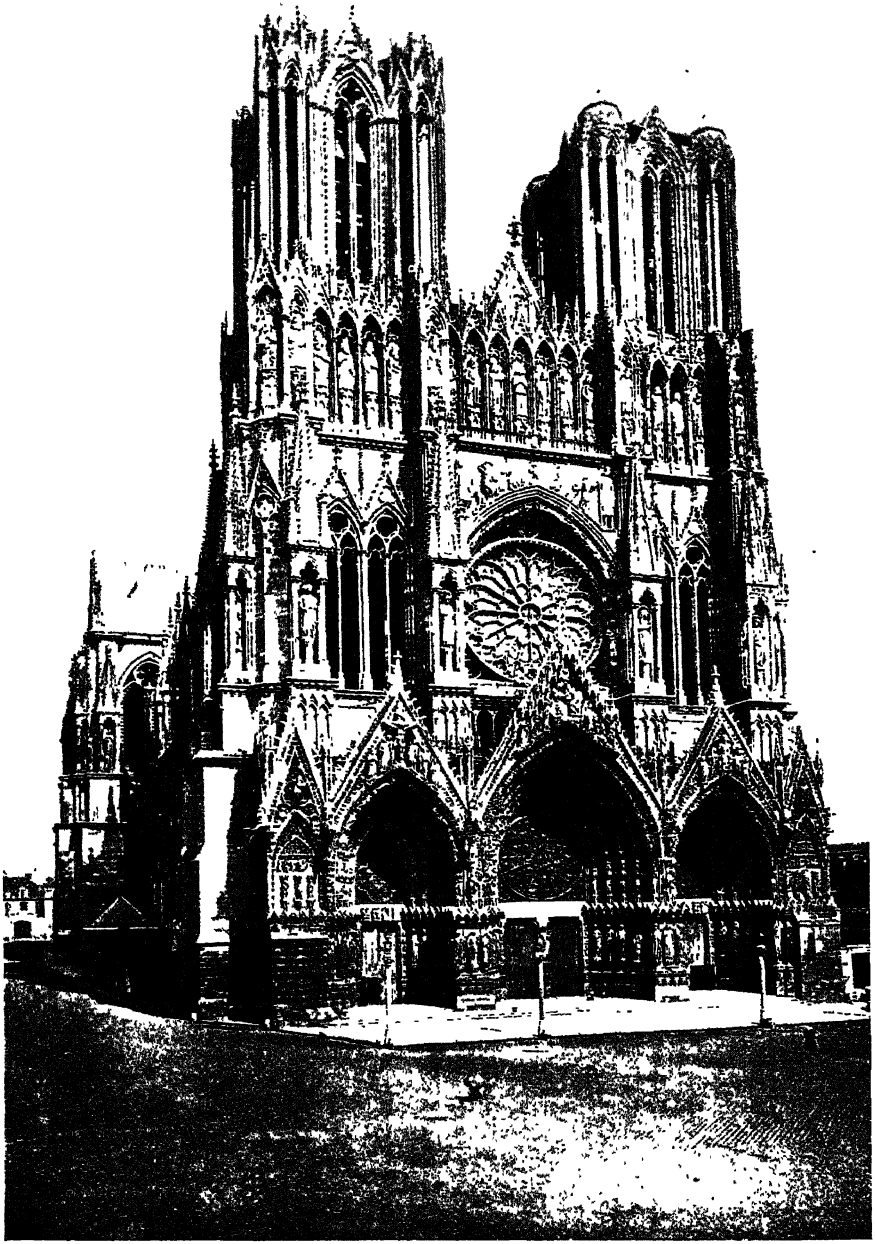
Le Mans Cathedral is remarkable for an austere nave in the Romanesque style (twelfth century), and for the vast choir (A.D. 1220–54), which is said to be larger than the whole Cathedral of Soissons. It has nave, double aisles, and a notable chevet, with thirteen chapels of unusual projection, of which there is an excellent view from the open space outside the city (p. 438 C).

Bourges Cathedral (A.D. 1190–1275) (pp. 441, 460 A), ultra-French in type, is remarkable for the absence of transepts and for shortness in proportion to width, and it has a general resemblance in plan to Notre Dame, Paris; while the nave has triforium, clear-story, and sexpartite vault, 125 ft. high (p. 441 C). The double aisles, in different heights, are unique in France, resembling Milan Cathedral (pp. 501 D, 496 B). The exterior presents an imposing appearance owing to its uniform width, unbroken by transeptal projections, while the west façade, 180 ft. wide, flanked by towers, has five portals approached by a fine flight of steps. The principal portal (p. 441 B) has double semicircular-headed doorways, with deeply recessed jambs and trefoil wall arcading, surmounted by richly canopied niches, and those on the right side still contain statues. A wide-spreading pointed arch spans the whole, in six rings, each filled with saints in canopied niches, and the tympanum has an elaborately sculptured "Last Judgment"—all surmounted by a steep gable enclosing a wheel window and niches. The exterior from the east end reveals a picturesque confusion of innumerable double flying buttresses over the aisles, with pinnacles and other features (p. 441 A); while the thirteenth-century stained-glass windows are amongst the finest in France.

Chartres Cathedral (A.D. 1194–1260) (pp. 304 E, 442, 461 B, 466 A, D, E, G, 460 E), dominating the town, has an extensive and interesting crypt, a remnant of an earlier church, still used for pilgrimages to the shrine of the Vièrge Noire. The plan has a short nave, strongly marked aisled transepts, each crowned with two towers, which, with the two western and two contemplated eastern towers and a central tower, would have made a magnificent pile of nine important towers. The unusual chevet is built above the crypt of the older church, while the spire (A.D. 1506) of the north tower is one of the most beautiful in Europe, and forms a contrast with the earlier one on the south (A.D. 1107). The interior (p. 442 B, C) has a fine nave arcade of circular piers with four shafts, low arcaded triforium surmounted by a clear-story of two-light pointed windows, all crowned with a quadripartite vault, 106 ft. high, in oblong bays—probably the first example in which the square bay was abandoned. The cathedral is remarkable, even in France, for the wonderful thirteenth-century stained glass of its one hundred and thirty windows, and for the profusion of fine sculptured figures in the doorways of the west front and in the triple porches of the north (p. 465 D, E) and south transepts. These famous figures, though somewhat archaic and stiff, are more ambitious than any previous French statuary. The flying buttresses are in three arches one above another, the two lower of which are connected by radiating balusters resembling the spokes of a wheel (p. 462 B).

Rheims Cathedral (A.D. 1212–41) (pp. 445, 446) owes its general arrangement to its purpose as the coronation church of the kings of France; for the nave and aisles of the western arm are broadened out in the eastern arm into


RHEMS
CATHEDRAL
A CHEVET CHAPEL (EXT.)
B INTERIOR LOOKING E.
C CHEVET CHAPEL (INT.)
D NAVE BAYS (INT.)
SCALE FOR SECTIONS
FT 130 120 110 100 90 80 70 60 50 40 30 20 10 0
40 MTRS 35 30 25 20 15 10 5 0
EXTERNAL WALKING WAY
124'4"
56'0"
100'0"
E TRANSVERSE SECTION ON XX
F NAVE BAYS (EXT.)
SCALE FOR PLAN
FT 100 50 0 25 50
30 MTRS 20 10 0 5 10
a
LABYRINTH
100'-0"
452'6"
162'6"
G PLAN
EXT. WALKING WAY
H PIER: NAVE CLEARSTORY
7'9½"
J PIER: NAVE ARCADE
WALKING WAY
7'0"
K PIER: NAVE TRIFORIUM
CHAPEL
ARCHBISHOPS PALACE
WALKING WAY
5'0"
L WALL PIER IN AISLE AT a.



RHEIMS CATHEDRAL FROM W.

a nave and double aisles, so as to include the projecting transepts and thus give space for coronation ceremonies; while the chevet has a ring of five chapels (p. 445 A, C, G), similar to Westminster Abbey, the design of which was largely inspired by this building (p. 353 D). The western façade, more ornate than that of Notre Dame, Paris, has the usual recessed portals exquisitely carved with some five hundred statues; the tympana are occupied by rose windows instead of sculpture, and each is framed in by five rings of statues and enclosed by richly ornamented gables, of which the central one contains the group of the Coronation of the Virgin (p. 446). Above the central portal is the magnificent rose window, 40 ft. in diameter, flanked by high traceried openings; while in the upper stage, instead of the open arcade of Notre Dame, is a band of tabernacled statues of the kings of France, above which rise the two lofty western towers enriched with angle turrets and originally surmounted by spires. The interior (p. 445 B) gives one an impression of vast space, and is grand in the extreme, with its nave arcade of clustered piers (p. 445 J) supporting pointed arches, surmounted by shallow triforium, lofty clear-story (p. 445 D), and fine intersecting vault, 125 ft. above the floor, while in the distance is seen the chevet with its columns. Flying buttresses, over single aisles in the nave (p. 445 E) and over double aisles at the east end (p. 301 E), show how the thrust of the vault is transmitted by arches to piers weighted by pinnacles and statuary. This great cathedral, which was the shrine of religion, the pride of France and a treasure house of art, was long subjected by the German army (A.D. 1914–18) to assault and mutilation, but has been skilfully restored.

Amiens Cathedral (A.D. 1220–88) (pp. 304 C, 451 A, 459 B, 461 A, 462 C, H, 465 H), by Robert de Luzarches, is a typical French cathedral, 450 ft. long and 150 ft. wide, with transepts only slightly projecting, and a sweeping chevet of seven chapels. The buttress chapels are later additions. The noble interior, spacious in its soaring height, seems but to enclose and not exclude the sky above, and the stone vault, 140 ft. high, is upheld by cylindrical columns with four attached smaller columns (p. 301 F). The great glory of this Cathedral—the "Bible of Amiens"—is the wonder of its carved woodwork in the choir stalls, which breaks away from studied lines and soars above like the branches of living trees. Other cathedrals are glorious without in sculptured stone, but Amiens is also lovely within, in carved wood. The western façade is one of the noblest among the wonderful façades in France, and with its serried ranks of statues somewhat resembles Notre Dame and Rheims. The central western doors are separated by one of the noblest of sculptured figures in the world, the "Beau Dieu d'Amiens." The ridge of the external wooden roof is over 200 ft. above the ground. The upper flying buttresses have only one aisle to span (p. 301 D). The slender timber flèche (p. 462 C, H), rising 180 ft. above the roof, forms the crowning feature of this beautiful church.

Bayeux Cathedral (C. A.D. 1150) is remarkable for its twenty-two chapels and immense crypt under the sanctuary, dating from the eighth to the eleventh century.

Noyon Cathedral (A.D. 1157–1228) combines the German triapsal plan and the French chevet, and has a large vaulted triforium.

Coutances Cathedral (A.D. 1254–74) (p. 451 B), on its dominating hill site, is famous for the two western towers and spires, and the beautiful octagonal lantern over the crossing of nave and transepts.

Rouen Cathedral (A.D. 1202–20) (pp. 304 B, 460 C), with its double-

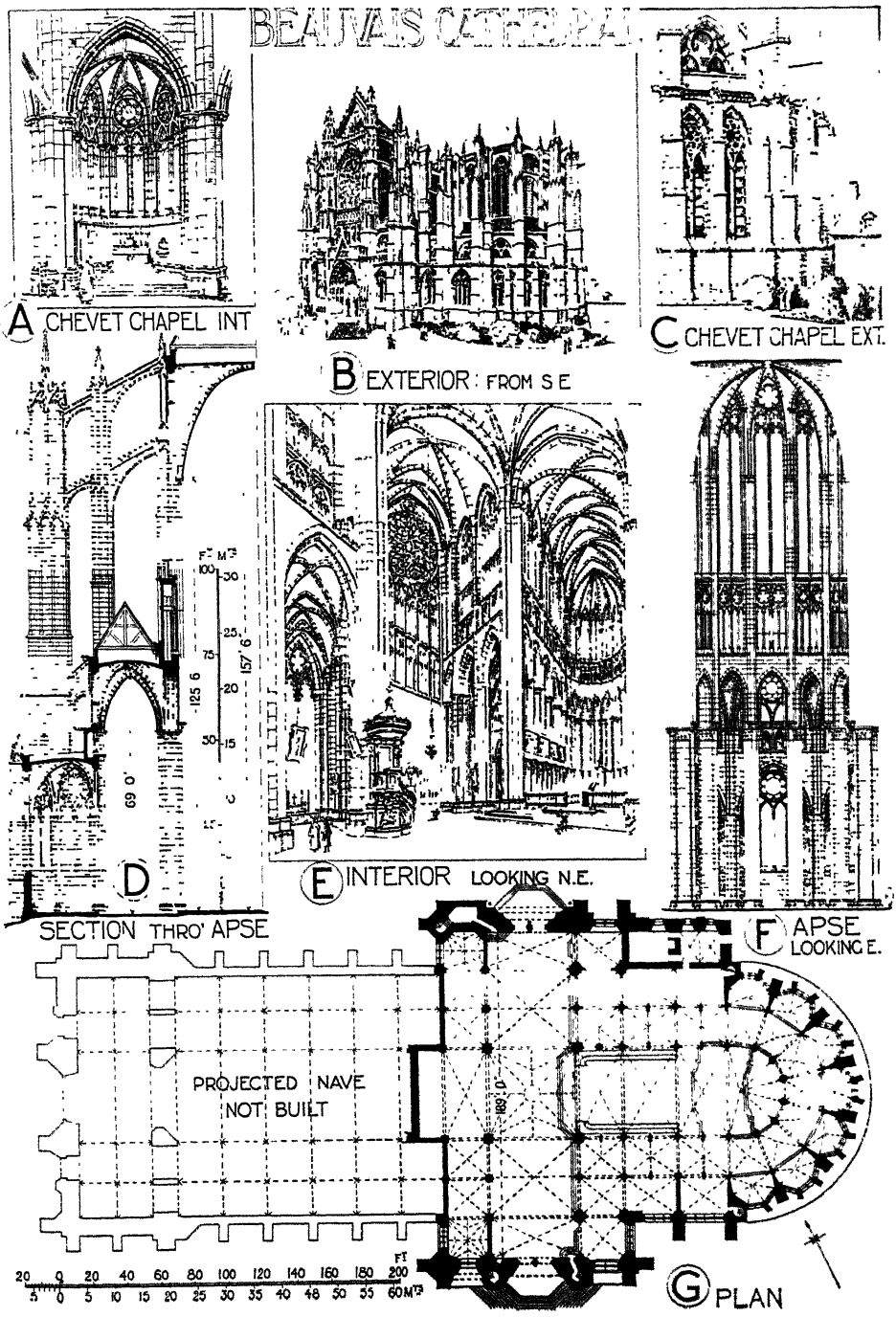
storeyed nave arcade and three beautiful towers, **Evreux Cathedral** (A.D. 1119–1531) (pp. 304 D, 460 B), **Troyes Cathedral** (A.D. 1214–1500) (p. 467), grand and wide with five aisles, ancient choir, chevet, and decorated west façade, and **Dol Cathedral**, a massive pile in the wide-sweeping street, are other interesting cathedrals. **S. Urbain, Troyes** (A.D. 1262) (p. 462 E), small and exquisite with triple porches; **S. Pierre, Caen** (A.D. 1308), with its bold turreted tower, and **S. Sauveur, Caen** (C. A.D. 1400), with twin naves—both with soaring spires; and **S. Pierre, Lisieux**, raised high on its approaching steps, are some among the crowd of wonderful churches which make the church fame of Normandy.

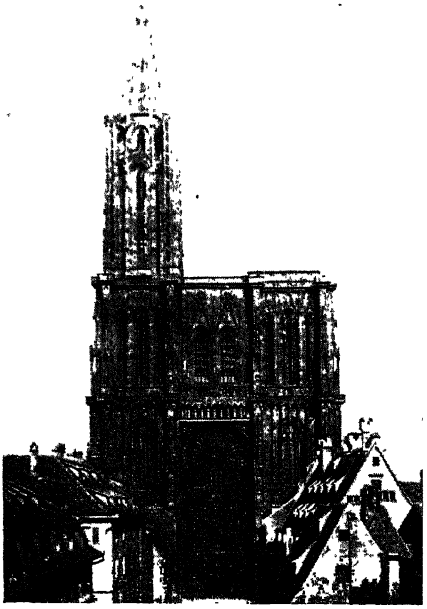
The **Sainte Chapelle, Paris** (A.D. 1244–47), built by S. Louis, in which the space between the buttresses is occupied by windows, 15 ft. wide and 50 ft. high, is often quoted as a typical Gothic structure. The plan (p. 459 D) was in size similar to that of S. Stephen, Westminster (p. 459 C), which was ruined by fire, and demolished for the rebuilding of Westminster Palace. It has a richly vaulted crypt, and such characteristic French features as the apsidal termination and high stone-vaulted roof.

Beauvais Cathedral (A.D. 1225–1568) (pp. 304 F, 449) was never completed westward of the choir and transepts (p. 449 G), and the site of the proposed nave is partly occupied by the Romanesque church known as the "Basse Œuvre." The roof fell (A.D. 1284), and the choir was reconstructed and strengthened by additional piers (A.D. 1337–47), and in the sixteenth century the transepts were built. There was an open-work spire, 500 ft. high, over the crossing, which collapsed in A.D. 1573, partly because there was no nave to buttress it on the west. The building is of extreme height, 157 ft. 6 ins. to the vault—the loftiest in Europe—and about three and a half times its span. This soaring pile is perhaps the most daring achievement in Gothic architecture, and has been regarded as one of the wonders of Mediæval France. The structure is held together internally only by a network of iron tie-rods, which suggest that these ambitious builders had attempted more than they could properly achieve, while flying buttresses (p. 449 B, D), in three tiers and of immense thickness, take the vault thrust. The polygonal chevet has seven encircling chapels (p. 449 A, C), and the rich stained-glass windows (p. 449 E) are of the thirteenth, fourteenth, and sixteenth centuries. The south transept façade (p. 449 B), now denuded of statues, is an ornate design in the Flamboyant style, even excelling the western fronts of many cathedrals, and the carved wooden doors are masterpieces of Gothic and Renaissance workmanship.

S. Ouen, Rouen (A.D. 1318–1515) (pp. 460 D, 461 H), of which the choir (A.D. 1318–39) is contemporary with that of Cologne; **S. Maclou, Rouen** (A.D. 1432–1500), probably the richest Flamboyant example in France; **S. Jacques, Dieppe** (A.D. 1350–1440), and **S. Vulfrand, Abbeville** (A.D. 1488–1534) are later examples in the north of France, mostly in the Flamboyant style.

Strassburg Cathedral (A.D. 1250–90) (pp. 304 G, 450) has a Gothic nave which was added to the Romanesque choir and transepts (A.D. 1179). The beautiful western façade has a recessed portal (p. 450 C), richly carved, as is usual in France, surmounted by an open-work gable and tracery in two planes, above which is a rose window, 42 ft. in diameter, flanked with double traceried windows and two western towers, one of which terminates in an open-work spire, 466 ft. high, erected in A.D. 1439. The north doorway (p. 450 D) has a crown of triple gables, and pierced parapets with intersecting mouldings. Like many an English cathedral it is the out-


BEAUVAIS CATHEDRAL
A CHEVET CHAPEL INT
B EXTERIOR FROM S E
C CHEVET CHAPEL EXT.
D SECTION THRO' APSE
E INTERIOR LOOKING N.E.
F APSE LOOKING E.
G PLAN
PROJECTED NAVE NOT BUILT
180'-0"
69'0"
125'6"
157'6"
FT M
100 30
75 25
50 20
30 15
20 0 20 40 60 80 100 120 140 160 180 200 FT
5 0 5 10 15 20 25 30 35 40 45 50 55 60 M

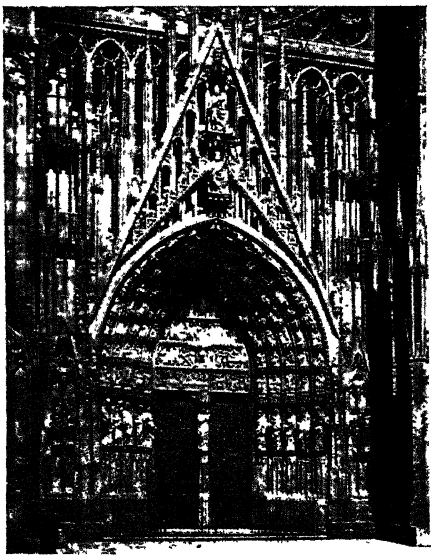


A. The Façade



B. Interior looking E.

Strassburg Cathedral



C. Principal Doorway



D. North Doorway

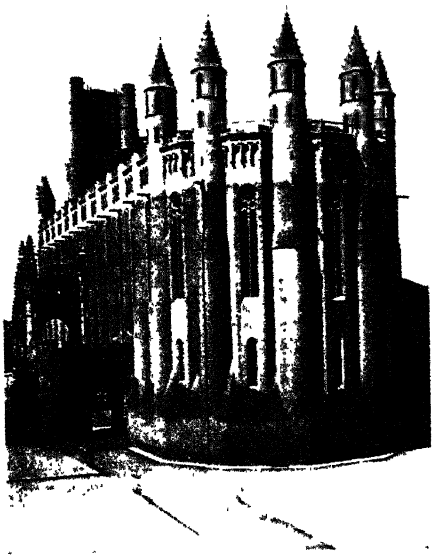
Strassburg Cathedral



A. Amiens Cathedral



B. Coutances Cathedral



C. Exterior from E.

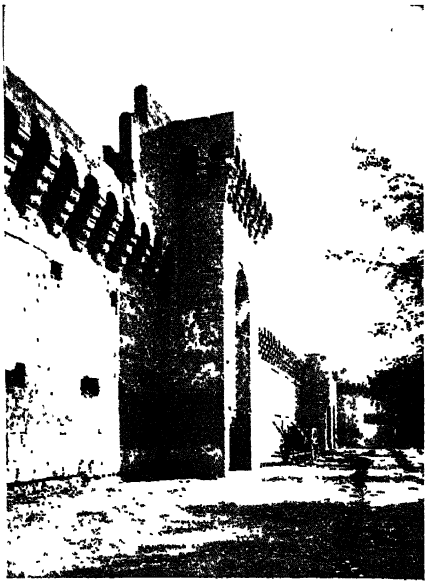


D. Interior looking W.

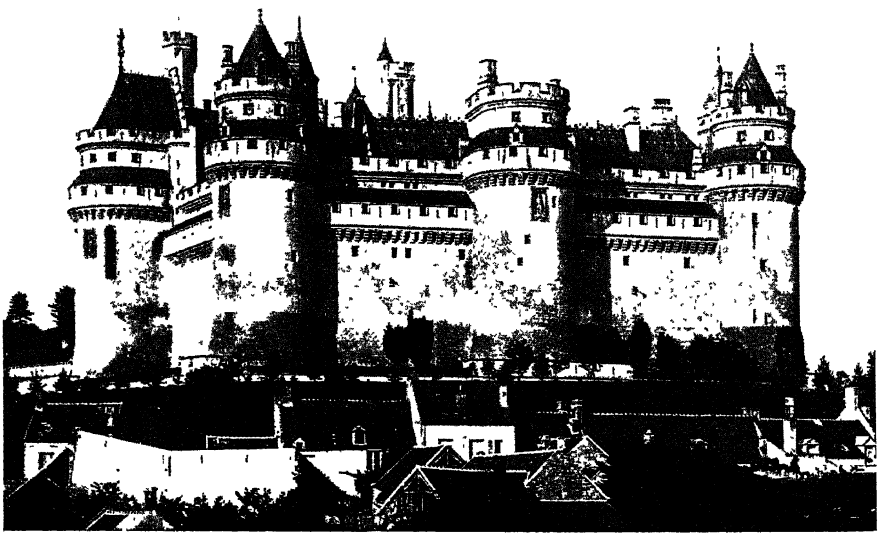
Albi Cathedral



A. House of Jacques Cœur, Bourges: The Courtyard



B. Avignon: Town Walls, showing machicolations



C. Château de Pierrefonds

come of four centuries of work, and one generation succeeded another in adding its part to this triumphal expression of devotional art, which now again takes its place among the religious monuments of France.

In the south of France there are fewer churches of the Middle Ages, partly because of the number erected in the Romanesque period, and they differ from northern churches in plan and design, owing to the proximity and influence of Roman buildings.

S. Sernin, **Toulouse** (A.D. 1080–96), a five-aisled Romanesque church (p. 277), has a western portion and tower which belong to the Gothic period.

Albi Cathedral (A.D. 1282–1512) (pp. 451 C, D, 460 F), a fortress-church, consists of a large impressive vaulted hall (59 ft. wide), which is the widest in France, with an apsidal end, a series of flanking chapels separated by internal buttresses, and an unrivalled fifteenth-century rood screen.

The **Church of the Cordeliers, Toulouse** (A.D. 1350), partially destroyed in A.D. 1871, was another example of this type, and has some similarity in plan with King's College Chapel, Cambridge (p. 383). **Angers Cathedral** (A.D. 1150–1274) and **Poitiers Cathedral** (A.D. 1160) are other notable churches of this period.

FORTIFIED TOWNS

France is rich in many types of secular Gothic buildings. There is a tendency to think that Gothic architecture was confined to churches, but the style of the period was employed for all buildings alike, whether domestic, military, civil, or ecclesiastical, although the purpose naturally influenced the design.

Carcassonne and **Aigues Mortes** are conspicuous among the fortified towns in the Gothic style. The former has both inner and outer walls with towers, dating from the thirteenth century, which still give an idea of a Mediæval fortress-town, entered through fortified gateways jealously guarded by machicolations, drawbridge, and portcullis.

Avignon, although the moat has been filled up, is still encircled by machicolated walls and towers (p. 452 B). The town contains the imposing castle with its cliff-like walls, which was the headquarters of the popes from A.D. 1307–77. The famous Pont d'Avignon, with its midway chapel (A.D. 1185), was thrown across the river by the *Frères Pontifes,* or guild of bridge-builders, to connect the town with Villeneuve.

Mont S. Michel, dating from the thirteenth century and much restored by Viollet-le-Duc, was a fortified monastery rather than a town; but within the circuit of its walls are secular as well as monastic buildings; while encrusted on the centre rock is the world-famous pile of the monastery in three storeys, with the so-called "Merveille" and the fascinating "Salle de Chevaliers."

CASTLES

Castles were generally built on mounds above rivers to command valleys, and had thick walls and small windows to resist attack, and thus they present a very different appearance from Gothic cathedrals, with their large traceried windows and forests of flying buttresses. Many castles were pulled down or adapted to make more convenient residences in the Renaissance period, and there are many such castles along the historic River Loire.

The **Château de Pierrefonds** (A.D. 1396) (p. 452 C), restored by Viollet-le-Duc, gives an admirable idea of other castles of this period. It stands

on a rocky height above the village, and its cliff-like walls, 20 ft. thick, rise sheer from the ground, and, like the eight massive round towers, are protected with machicolations and battlemented parapets which surround the buildings grouped round an irregular courtyard, while the entrance is guarded by a drawbridge over the moat.

HÔTELS DE VILLE

These are few, as there was little municipal life under the feudal system, and in this France differed from Flanders and Italy. Communal business seems to have been carried on in the market-place or even in churches and cloisters.

The **Hôtel de Ville, Arras**, has an open arcade under a large hall lit by pointed traceried windows, and a characteristically steep roof, containing three storeys of dormer windows; while the giant belfry rises 250 ft. above the ground; but all is now in ruins from German bombardment.

The **Hôtel de Ville, Bourges**, was distinguished externally by a Flamboyant tower (p. 455 C) ornamented with tracery, crockets, sculptured figures, and windows, and internally the chimney-piece is unusually fine, even for this period (p. 455 F).

The **Hôtel de Ville, Dreux** (A.D. 1537), retains the resemblance to a square donjon with pyramidal roof, and the **Hôtel de Ville, Compiègne** (fifteenth century), is another beautiful example of civic architecture, with mullioned windows, traceried parapet, and central tower, which has also been subjected to German bombardment.

PALAIS DE JUSTICE

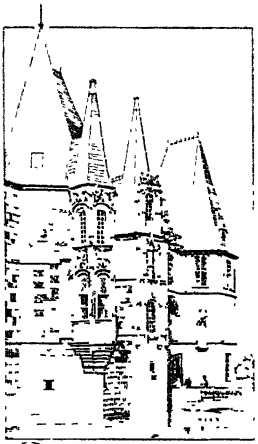
These were originally the great halls in which kings and nobles dispensed justice to their vassals, while ecclesiastical courts dealt with matrimonial cases and laws of inheritance; but towns with charters eventually obtained their own magistrates. The **Palais de Justice, Rouen** (A.D. 1493–1508) (pp. 455 B, 456 B), is an exceedingly rich specimen of French municipal architecture and is eloquent of the importance of this old city of the Norman kings. The magnificent hall (135 ft. by 57 ft.), rivalling the Guildhall, London, in size, occupies one side of the building, and has a fine pointed timber roof; while from the centre of the group rises the tower with traceried windows. The late Gothic façades are crowned with a steep roof and dormer windows—all rather over-restored in A.D. 1876.

HOSPITALS

The " Maisons Dieu " were attached to monasteries or provided in cities for the treatment of the sick, and for distribution of alms to travellers and pilgrims. The **Hospital, Beaune** (A.D. 1443), still in use, has a spacious hall with beds along the walls. There are old timber galleries round a courtyard for open-air treatment, thus forecasting modern sanatoria. The gabled roofs, in coloured tiles, have dormer windows with barge-boards and tall finials, while a stair-turret in the angle of the court completes the quaint setting of this quiet enclosed space.

COUNTRY HOUSES

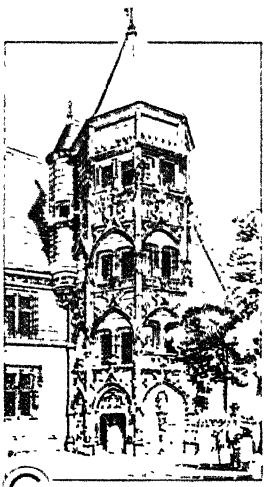
On the introduction of gunpowder, and with the development of the new social order in the fifteenth century, country houses took the place of fortified



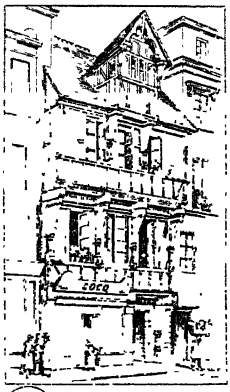
A LE CHATEAU D'O MORTREE



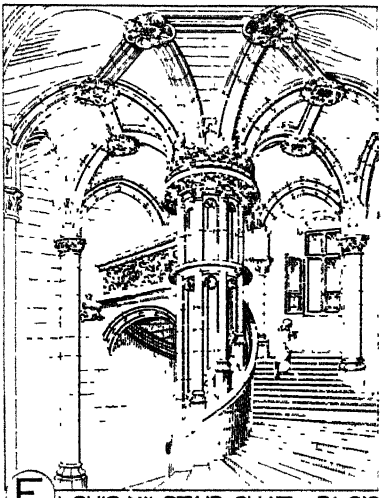
B PALAIS DE JUSTICE: ROUEN



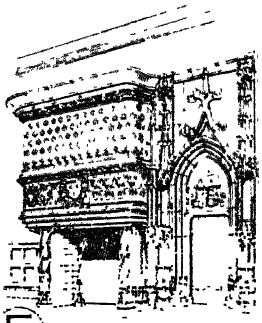
C HOTEL DE VILLE: BOURGES



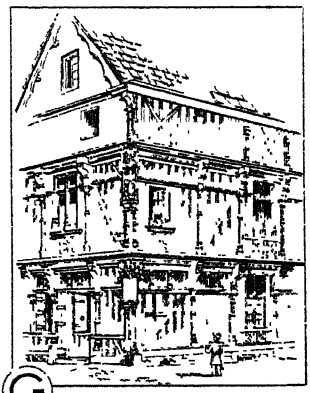
D TIMBER HOUSE CAEN



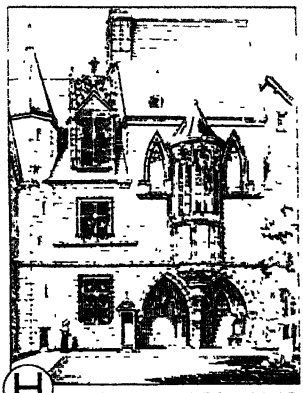
E LOUIS XII STAIR: CHAT. DE BLOIS



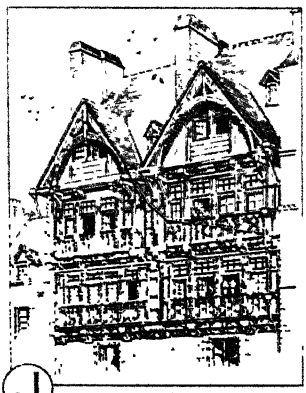
F STONE CHIMNEY-PIECE HOTEL DE VILLE: BOURGES



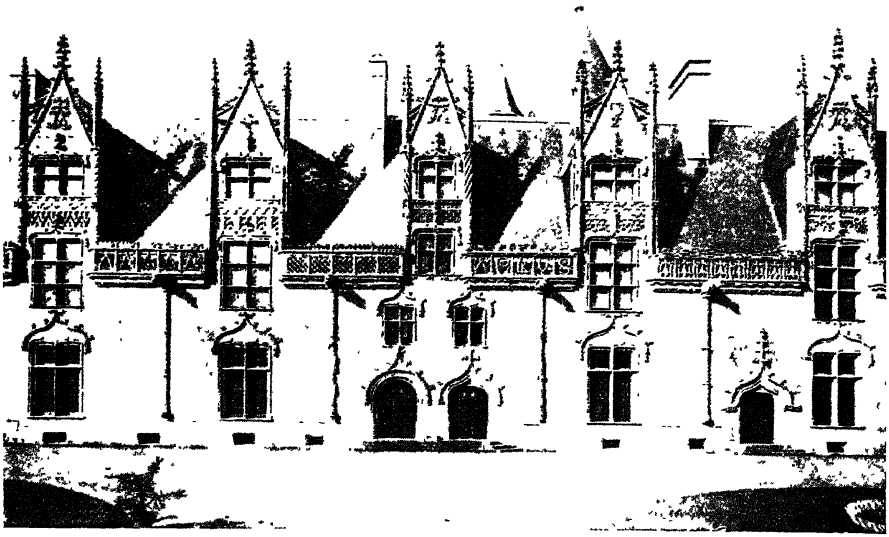
G TIMBER HOUSE: BEAUVAIS



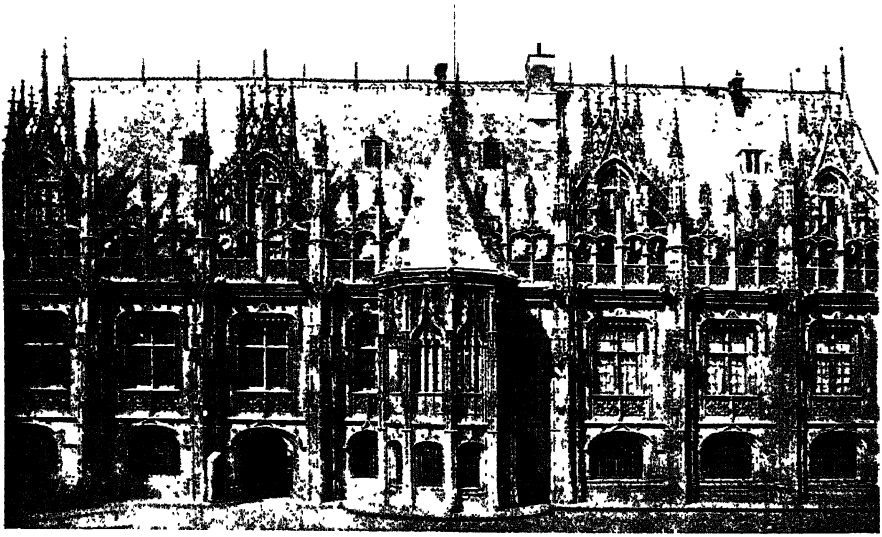
H HOTEL DE CLUNY: PARIS



J HALF-TIMBER HOUSE: S.LO



A. Château de Josselin, Brittany



B. Palais de Justice, Rouen

castles, though they were still called " châteaux." The **Château d'O, Mortrée** (p. 455 A), and the **Château de Chateaudun** (rebuilt A.D. 1441) are both stately mansions rather than castles. The **Château de Blois** (east wing) (A.D. 1498–1515) is notable for its fine gateway with double entrance to the court, around which later buildings were added (p. 631). The Gothic spiral staircase of Louis XII (p. 455 E) was undoubtedly the model for the marvellous staircase of Francis I of the early Renaissance period (p. 631). The **Château de Josselin, Brittany** (p. 456 A), although dating from the twelfth century, was rebuilt in the early sixteenth century, and with its circular towers, ogee door-heads, mullioned windows, traceried parapet, and steep roof with dormer windows, forms a picturesque group typical of so many others scattered throughout France.

TOWN HOUSES

The " maisons nobles " began to rise in the fifteenth century when French nobles ceased to be merely feudal lords in fortified castles, and erected houses, known to this day as " hôtels," planned, as in the country, round a court and with an elaborate façade to the street. The **House of Jacques Cœur, Bourges** (A.D. 1443) (p. 452 A), is undoubtedly the finest Mediæval town residence in France. It was built by a merchant prince, partly on the town ramparts, round a central court and has seven turret stairs. The **Hôtel du Bourgthéroulde, Rouen** (A.D. 1475), well exemplifies this type of town house, with its enclosed court surrounded by façades somewhat resembling the Palais de Justice in the same city. The **English Embassy, Dijon** (fifteenth century), was one of the great town houses of this period. The central court contains an angle turret stair with newel branching into a richly carved head ; while the street façade has some fine figures carved in wood. The **Hôtel de Cluny, Paris** (A.D. 1485)—now a museum—retains its Mediæval character almost intact, and is a fine specimen of late Gothic. The Chapel (p. 455 H), as seen from the court behind the museum, stands above an arcade which supports on its central pier an oriel window of pleasing proportions with Flamboyant tracery, crockets, and finials.

Smaller domestic buildings still exist as in Cluny, where doors and windows are of the later Romanesque type ; while in S. Lo (p. 455 J), Lisieux, Caen (p. 455 D), Chartres, Beauvais (p. 455 G), and Rouen there are timber houses with carved barge-boards and overhanging storeys to give more room, due to the confined space within the town walls ; but a large number have succumbed to the ravages of time and fire.

Market halls, fortified farm houses, and great timber barns all reveal the development of country life in Old France.

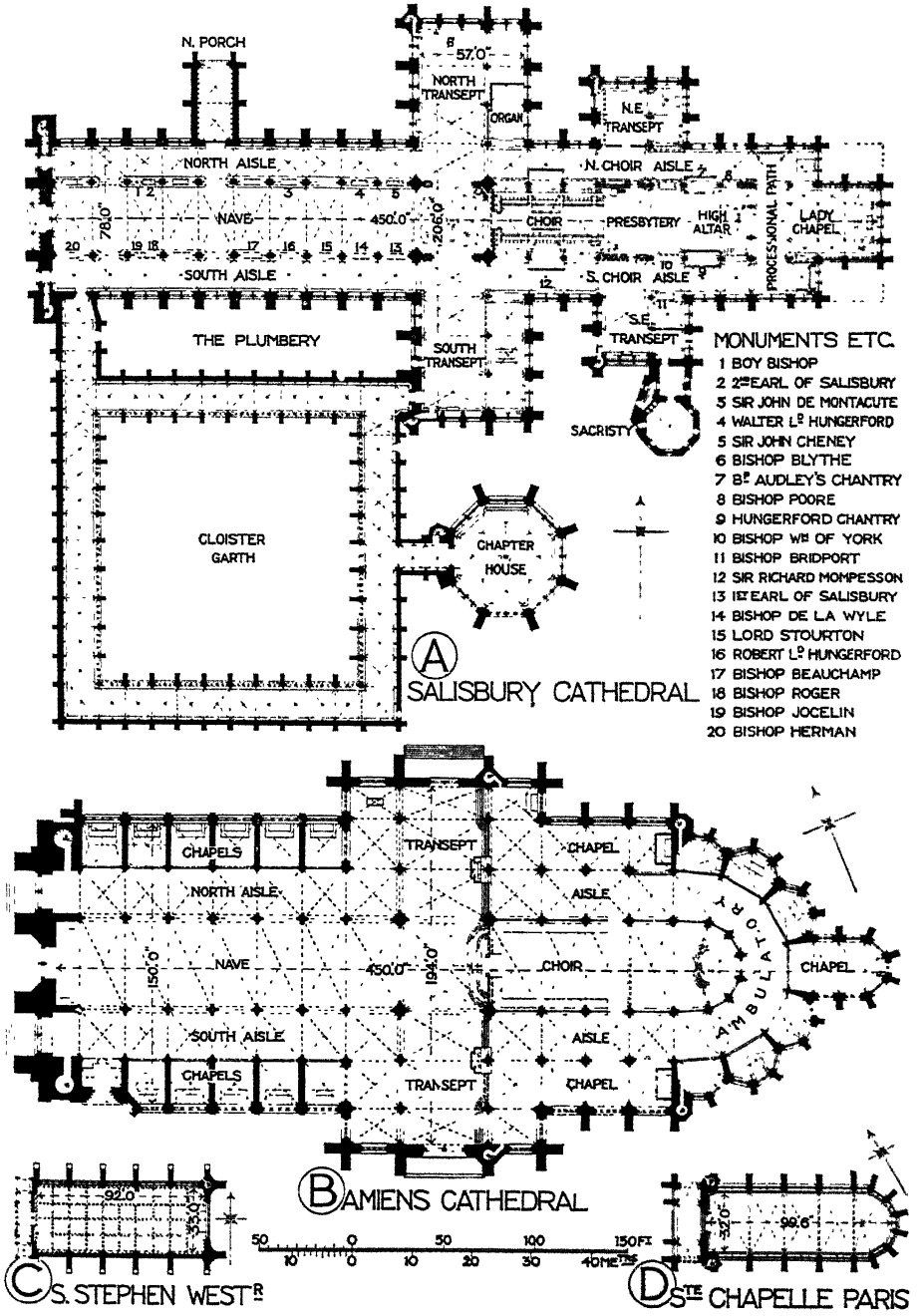
4. COMPARATIVE ANALYSIS

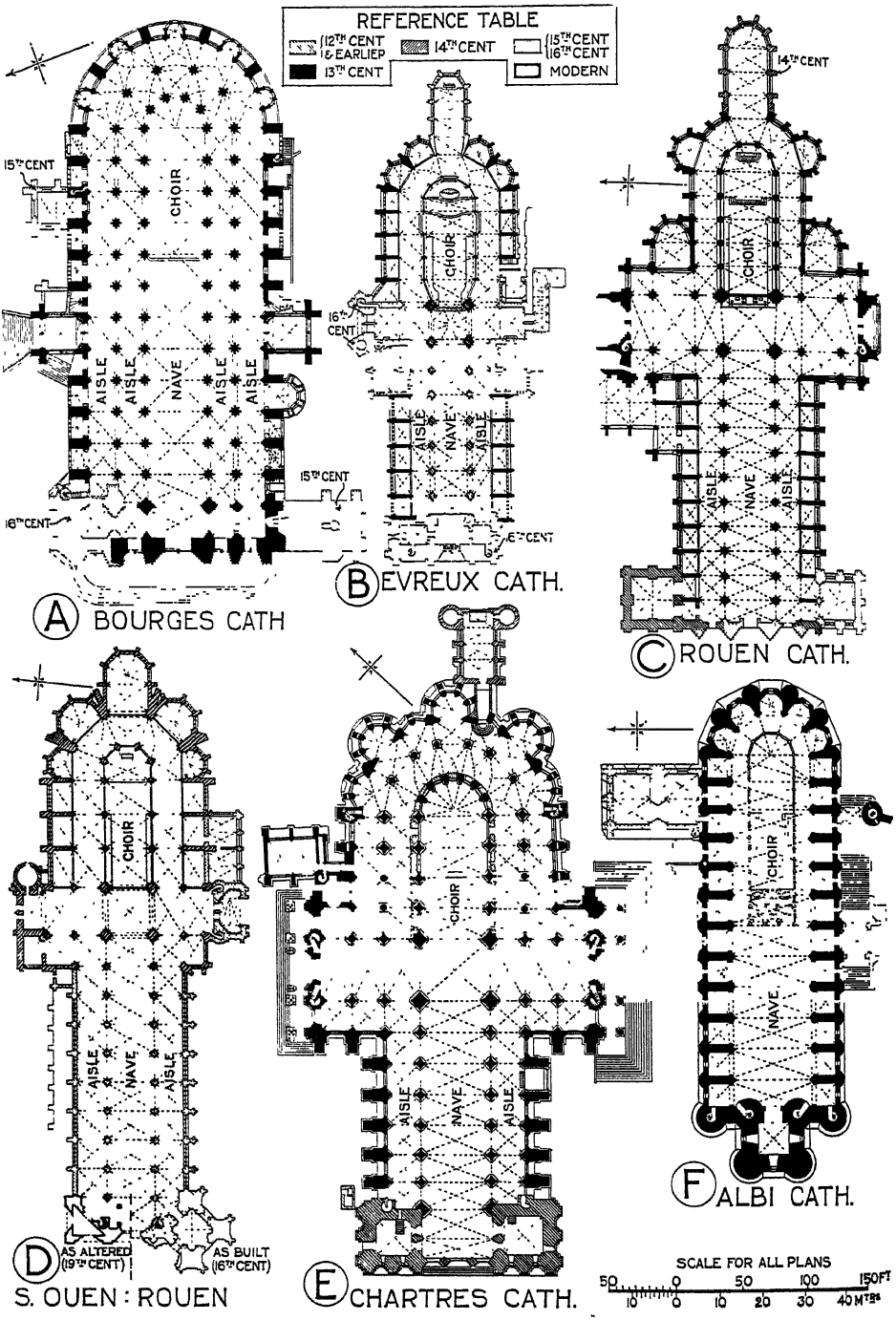
This comparative table contrasts the differences in the development of the Gothic style in France and England.

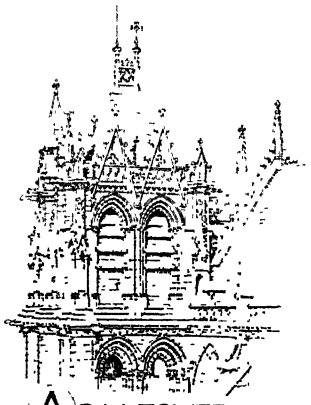
FRENCH GOTHIC	ENGLISH GOTHIC
A. Plans (pp. 459 B, 460).—Cathedrals are short, wide, and lofty.	A. Plans (p. 459 A).—Cathedrals are long, narrow, and low.
Length about four times the width.	Length about six times the width.
Cloisters rare, except in the south, owing to the lay origin of French cathedrals.	Cloisters usual, owing to monastic origin of many English cathedrals.

FRENCH GOTHIC	ENGLISH GOTHIC
Transepts have slight projection, as at Paris (p. 437 G) and Amiens (p. 459 B), or they are absent, as at Bourges (p. 460 A).	Transepts have bold projection and secondary transepts are found, as at Salisbury (p. 459 A) and Lincoln (p. 332 F).
Lateral chapels numerous for the popular worship of saints and the saying of masses (p. 461 J).	Lateral chapels rare in those cathedrals which were designed for monks and not for laity.
The apsidal east end developed into the "chevet" by addition of processional aisle and chapels. Laon, Dol, and Poitiers are exceptions.	The square east end replaced the apse, while the "Chapel of the Nine Altars," Durham, forms an eastern transept. Westminster has the French "chevet."
Aisles are sometimes double, as at Notre Dame, Paris (p. 437 G), Amiens, Bourges (p. 460 A), Rheims (p. 445 G), and Chartres (p. 460 E).	Aisles are single, both in sanctuary and nave, with the exception of Chichester (p. 334 G) and Manchester (p. 334 B).
Two western towers characteristic, as at Paris (p. 438 A), Rheims (p. 446), and Amiens (p. 462 C), and owing to the great height of the nave a flèche was often substituted for the central tower, as at Amiens (p. 462 C, H) and Paris (p. 437 B).	A central tower the predominant feature, as at Gloucester (p. 330 D), Hereford (p. 331 F), Rochester (p. 331 D), Salisbury (with spire) (p. 329 G), or combined with western towers as at Canterbury (p. 330 G), Durham (p. 330 C), and York (p. 330 B). Lichfield with three spires is unique (p. 329 E).
Central spires are common in Normandy, as at Rouen and Caen.	A single western steeple is usual in churches, as at Heckington (p. 360 A).
Towers sometimes designed in groups; there were to have been seven at Laon (p. 443) and nine at Chartres (p. 444).	Towers never exceeded three, two western and one central, as at Canterbury (p. 346 A), Lincoln (p. 348 A), Durham (p. 336 A), and York (p. 330 B).
Piers of nave arcades widely spaced.	Piers of nave arcades closely spaced.
Chapter houses rectangular.	Chapter houses often polygonal.
B. Walls.—Early buttresses were a development from Romanesque pilaster strips or were semicircular, especially in apses. Later buttresses of deep projection have chapels between them (p. 437 G).	B. Walls.—Early buttresses project more than Norman and have gabled heads, as at Salisbury, Westminster, and Southwell (p. 404 C). Later buttresses are strongly marked with offsets and pinnacles ornamented with niches and panelling (p. 404 J, K).
Buttresses often vertical without offsets (p. 449 D). Weatherings to offsets of buttresses are flatter the higher they occur.	Buttresses usually in stages with offsets (p. 404). Weatherings to offsets of buttresses are steeper the higher they occur.
Flying buttresses largely employed on account of height of naves and width of double aisles (pp. 301 D, E, F, 462 A, B). They were used with special effect round the chevet (pp. 437 B, C, 438 C, 441 A, 449 B).	Flying buttresses are not so frequent, because the nave with its clear-story is comparatively low and there are no double aisles or chevet; none were required for the square east end.
Interiors owe their effect largely to great height, otherwise they are less ornate than English interiors.	Interiors owe much to the elaboration of complex piers, triforium, variety of clear-stories, and ribbed vaulting.
Parapets have open tracery (pp. 461 H, 462 F).	Parapets are battlemented (p. 416 D, E, F).
The characteristic west front is that of Notre Dame, Paris (p. 438 A).	The characteristic west front is that of Wells Cathedral (p. 342 B).

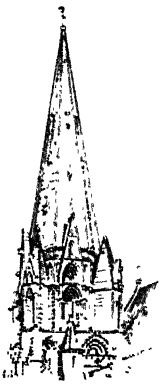
TYPICAL ENGLISH & FRENCH GOTHIC PLANS



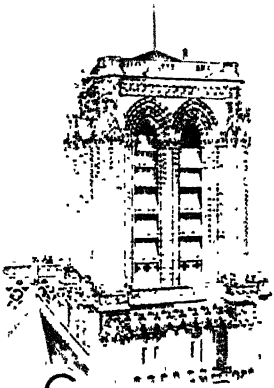

REFERENCE TABLE
12TH CENT & EARLIER
13TH CENT
14TH CENT
15TH CENT 16TH CENT
MODERN
15TH CENT
CHOIR
AISLE
AISLE
NAVE
AISLE
AISLE
16TH CENT
15TH CENT
16TH CENT
A BOURGES CATH
16TH CENT
CHOIR
AISLE
NAVE
AISLE
16TH CENT
B EVREUX CATH.
14TH CENT
CHOIR
AISLE
NAVE
AISLE
C ROUEN CATH.
CHOIR
AISLE
NAVE
AISLE
AS ALTERED (19TH CENT)
AS BUILT (16TH CENT)
D S. OUEN : ROUEN
CHOIR
AISLE
NAVE
AISLE
AISLE
NAVE
AISLE
E CHARTRES CATH.
CHOIR
NAVE
F ALBI CATH.
SCALE FOR ALL PLANS
50 0 50 100 150FT
10 0 10 20 30 40 MTRS



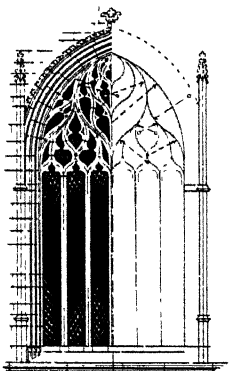
A S.W. TOWER
AMIENS CATH=



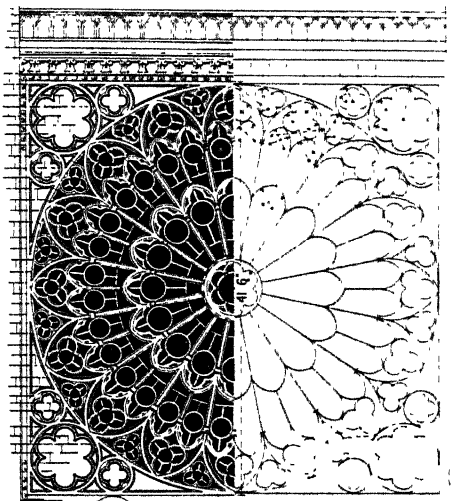
B S.W. SPIRE: CHARTRES



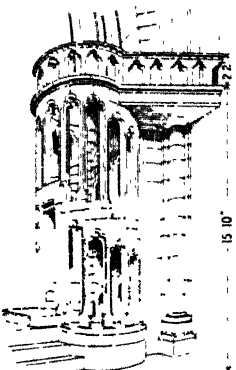
C N.W. TOWER
NOTRE DAME: PARIS



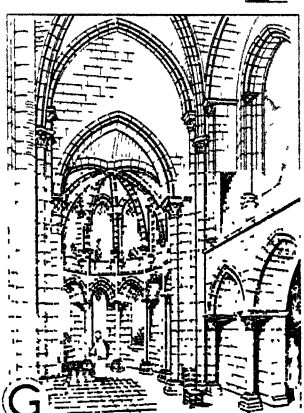
D WINDOW
S. MARY: DINAN



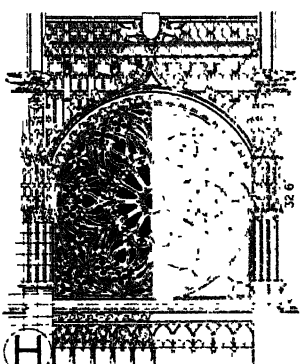
E ROSE WINDOW
NOTRE DAME: PARIS



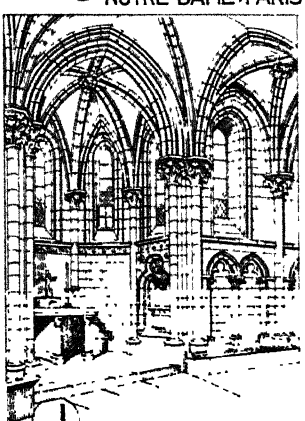
F STONE PULPIT STAIR
NOTRE DAME: PARIS



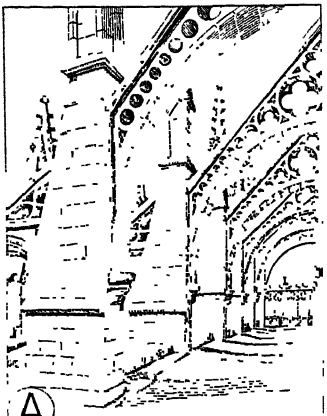
G CHAPEL: LAON CATH=



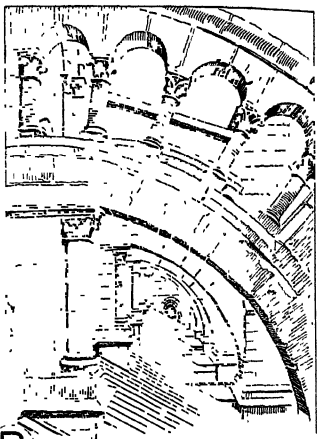
H ROSE WINDOW: S. OUEN: ROUEN



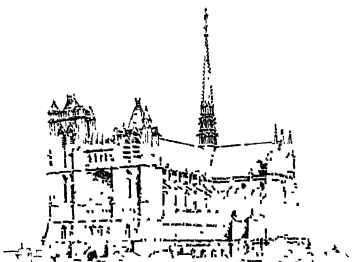
J CHOIR CHAPEL: NORREY



A FLYING BUTTRESSES NOTRE DAME: LOUVIERS



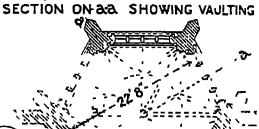
B FLYING BUTTRESSES CHARTRES CATHEDRAL



C AMIENS CATHEDRAL FROM S.W. SHOWING POSITION OF FLECHE



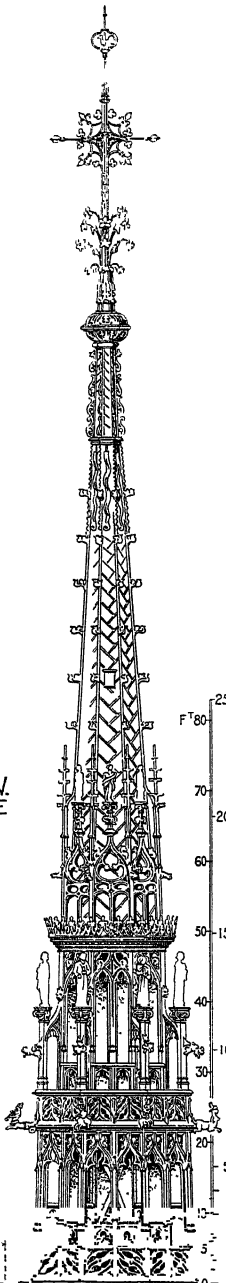
SECTION ON a-a SHOWING VAULTING



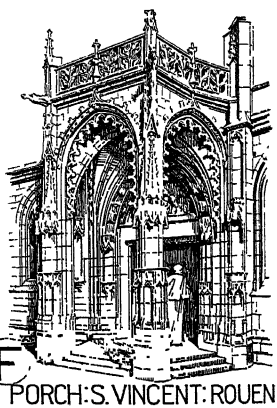
D ½ PLAN: LADY CHAPEL CAUDEBEC CHURCH



E PORCH: S. URBAIN: TROYES



H ROOF FLECHE: AMIENS CATH.



F PORCH: S. VINCENT: ROUEN



G PIERS: NORTHERN FRANCE



J PIERS: SOUTHERN FRANCE

FRENCH GOTHIC	ENGLISH GOTHIC
c. **Openings.**—Arcades developed through high pointed to three-centred arches in the late period.	c. **Openings.**—Arcades developed through high pointed to four-centred arches in the late period.
Doorways are elaborate (p. 462 E, F), large, and deeply recessed in the west façades and framed in with statues of saints carried round the arches in serried rows, as at Paris, Bourges (p. 441 B), Rheims (p. 446), Grand Andely (p. 466 B), Chartres (p. 465 D, E), and Troyes (p. 467).	Doorways are usually placed laterally within a protecting porch encrusted with statuary in canopied niches, and are either on the south, as at Canterbury (p. 346 A) and Gloucester (p. 330 D), or on the north as at Salisbury (p. 345 A, B) and Wells.
Windows have "plate" tracery which developed, through geometric "bar" tracery, into "flamboyant," probably derived from English curvilinear (p. 461 D).	Windows developed through "plate" tracery to geometrical and curvilinear and the final English treatment, known as perpendicular tracery (p. 408).
There is an absence of cusps in late French tracery.	Cusping became very elaborate in late English tracery.
Circular windows occur in west fronts, as at Rheims (p. 446), Paris (p. 461 E), Troyes (p. 467), and in transepts as at Chartres (p. 442 A) and S. Ouen, Rouen (p. 461 H).	Circular windows are not used for west fronts, but form special features in transepts, as at Westminster (p. 354 B), Durham, Lincoln, and elsewhere.
D. **Roofs.**—Always steep and finished with metal ridges and finials (p. 437 B).	D. **Roofs.**—Moderate in pitch, approaching flatness in later periods (p. 363).
Usually constructed with double timbers of a special type to surmount high vaults.	Carpentry was more advanced, and so single-framed timbers were used over vaults.
Ornamental wooden roofs not much developed as part of internal design.	Ornamental wooden roofs, such as "hammer-beam," are elaborated as part of internal design.
Slates were used as roof coverings.	Lead was the usual roof covering.
Vaults were in general use both for cathedrals and churches. Usually of great height and domical, and provided with transverse and diagonal ribs and bosses (p 465 A, C), they show little evolution in design and treatment. Ridge, intermediate and lierne ribs were rare (pp. 438 B, 441 C).	Vaults were used in cathedrals and timber roofs in parish churches. Level ridge ribs, longitudinal, transverse, diagonal, tierceron, and lierne ribs resulted in complicated stellar vaulting (p. 324). Vaults sometimes of wood, as at York p. 344). See Evolution of Vaulting (p. 327).
Pendants are frequent in the "Flamboyant" period (p. 462 D). The joints of the panels are laid in courses, parallel to the ridge lines (p. 303 F).	Fan tracery vaulting (pp. 324 H, 358) was peculiar to England. The joints of panels are at right angles to a line bisecting the panels (p. 303 F).
E. **Columns.**—Plain cylindrical piers are characteristic, as at Paris (pp. 437 F, 438 B, 462 G), where the vaulting shafts start awkwardly above the square abaci of the arcade columns (p. 466 A, C). Square piers, with attached three-quarter columns, owing to Roman tradition (p. 462 J), are found in the south. Piers are sometimes without capitals, as at Lisieux, in which case the mouldings of the arches die into the cylindrical shafts.	E. **Columns.**—Clustered piers are special features, as in Salisbury and Exeter (p. 410 P, Q), and were preferred to cylindrical piers. The adoption of attenuated shafts to continue the lines of the vaulting ribs largely determined the form of piers and avoided the difficulty met with in France, and the characteristic evolution of moulded piers in each period was controlled by the increasing number of vaulting shafts (p. 410).

FRENCH GOTHIC	ENGLISH GOTHIC
Capitals with foliage of the Corinthian-esque type lasted well into the style, and "stiff-leaf" foliage and the "crocket" capital (p. 465 J, K) were characteristic, crowned with a square abacus. Moulded "bell" capitals without foliage are found in Normandy with circular abaci, as in England.	Capitals of a Classic type were employed in the Norman period, as in S. John's Chapel, Tower of London, while Early English carved capitals have "stiff-leaf" foliage (p. 413 D, E, F). Moulded "bell" capitals are common to all periods and are crowned by round, octagonal, or polygonal abaci (p. 410 L, Q, U).
F. Mouldings.—Large, less varied (p. 465 F), and not so ornate as in England and often at some distance from window openings. In the late or Flamboyant period mouldings were almost as deeply undercut in stone as in wood and only limited by the granular nature of the material.	F. Mouldings.—Bold, rich, and of great variety and applied to bases, capitals, and pier arches, as well as door and window openings (pp. 410, 414). Mouldings show gradual development from the pronounced bowtells and deep hollows of the early period to the flat bracket moulding of the late period.
G. Ornament.—Decorative figure sculpture reached its greatest perfection in the cavernous doorways of the west fronts of Paris (p. 438 A), Amiens, Rheims (p. 446), and in the north and south porches of Chartres (p. 465 D, E), where successive tiers of statues in niches surround the arches (pp. 441 B, 466).	G. Ornament.—Decorative figure sculpture was not so freely used, or of such high quality as in France, and was not confined to portals, but was spread over whole façades, as at Wells, Lichfield, and Exeter. The "dog-tooth," ball-flower, and Tudor rose enriched the hollow mouldings (p. 415).
Carved tombs (p. 466 F), fonts (p. 465 G), gargoyles (p. 465 B), finials, crockets, and corbels are of fine workmanship, and animals, birds, and grotesques were introduced especially in the south.	Carving varies considerably in each period, conventional in Early English, naturalistic in Decorated, and again partly conventional in Perpendicular (pp. 413, 415, 416, 421).
Stained glass was much developed, and at Chartres a prevailing blue merging into violet gives an idea of the general effect which artists intended to produce in church interiors. Much of the best stained glass has, however, been destroyed, notably at Rheims.	Stained glass was developed on similar lines as in France—earlier examples, as at Canterbury, were in small heavily leaded pieces; whereas later windows consist of large figures in simulated niches with crocketed canopies.
Colour decoration in frescoes and applied to sculpture seems to have been much used, and hangings were imitated in diaper work (p. 465 H) and wall decorations.	Colour decoration of walls and sculpture was much employed. Painted timber roofs and rood screens are characteristic in the Perpendicular period.

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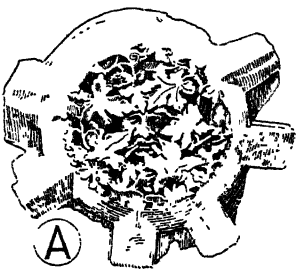
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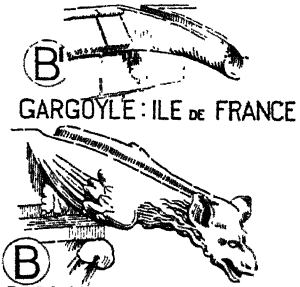
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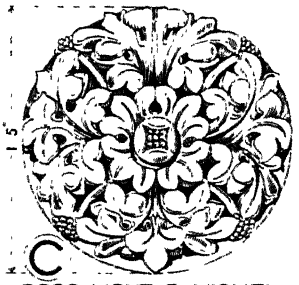


A VAULTING BOSS: DIJON MUS[E]

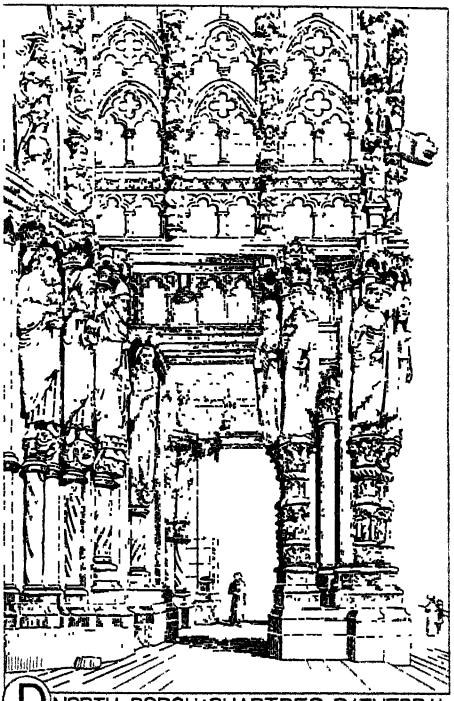


B GARGOYLE: ILE DE FRANCE

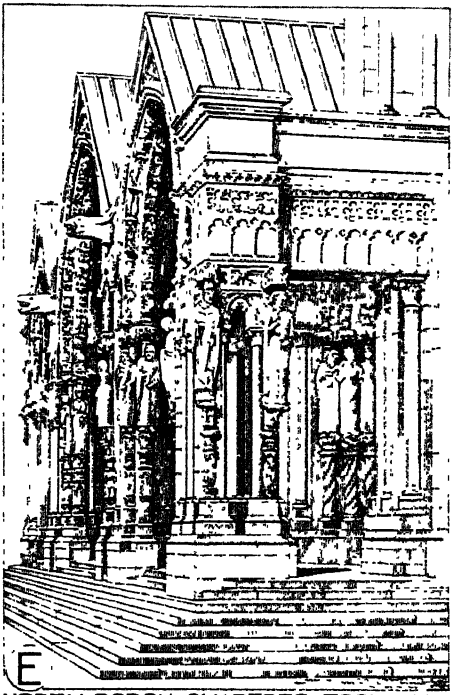
B GARGOYLE: S. CHAPELLE: PARIS



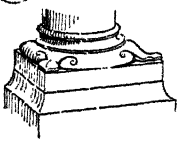
C BOSS: MONT. S. MICHEL



D NORTH PORCH: CHARTRES CATHEDRAL

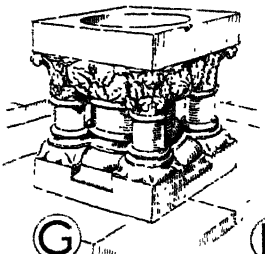


E NORTH PORCH: CHARTRES FROM N.W.

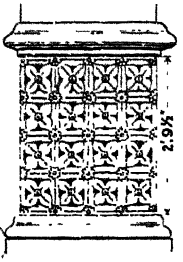




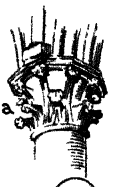
F BASES S. MICHAEL'S CHAPEL. MONTREALE



G FONT URCEL NR. LAON

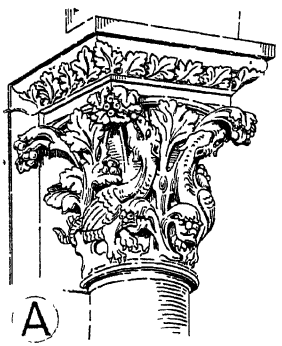


H DIAPER ON PEDESTAL AMIENS CATHEDRAL

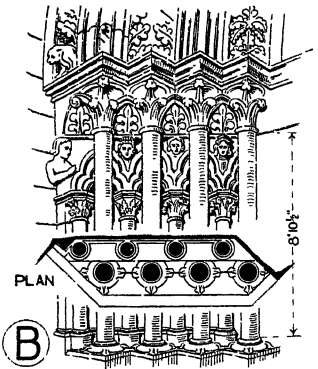




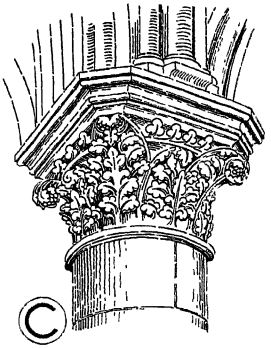
J CROCKET CAPITAL: SEMUR



A
CAPITAL N. PORCH
CHARTRES CATHEDRAL



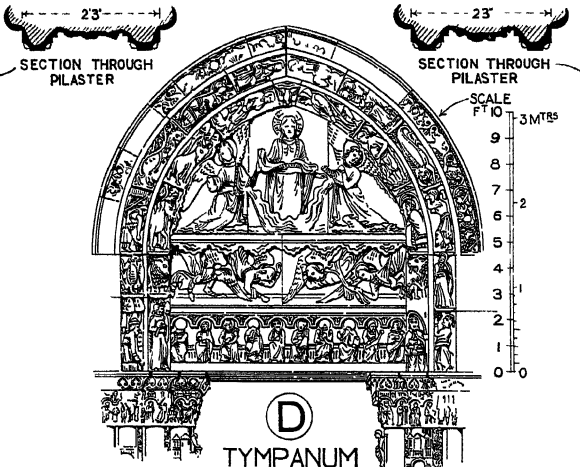
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JAMB W. DOORWAY GRAND ANDELY



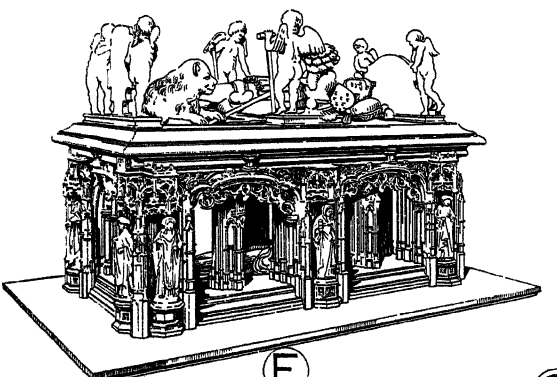
C
CAPITAL: NOTRE DAME
CHALONS-SUR-MARNE



E PILASTER
S. PORCH: CHARTRES



D
TYMPANUM
LEFT DOORWAY OF WEST PORTAL: CHARTRES



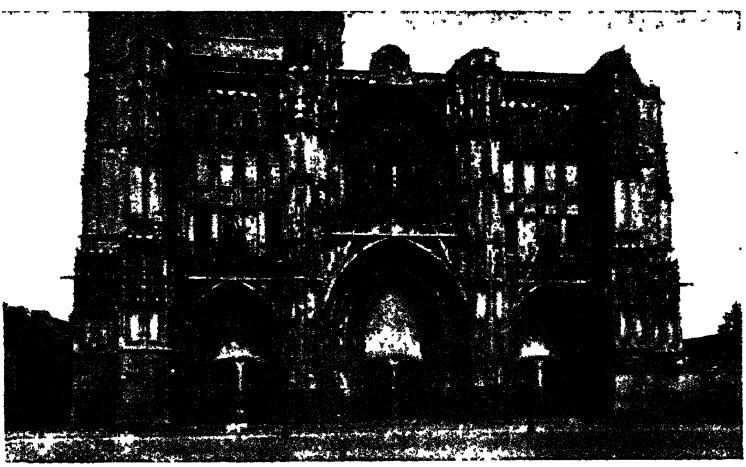
F
TOMB OF PHILIBERT LE BEAU: BROU



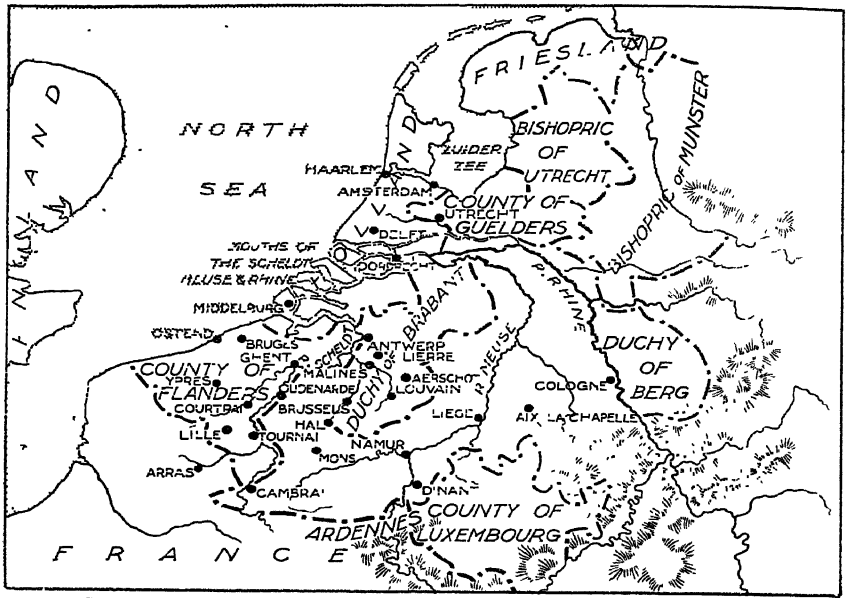
G PILASTER
S. PORCH: CHARTRES

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Blisset (N. K.).—" The most famous Loba."
Dumas (A.).—" Notre Dame."
James (G. P. R.).—" Philip Augustus."
Lang (A.).—" A Monk of Fife."



TROYES CATHEDRAL



THE NETHERLANDS IN THE MEDIÆVAL PERIOD

BELGIAN AND DUTCH GOTHIC

1. INFLUENCES

i. **Geographical.**—The Netherlands lie wedged in between countries inhabited by Teutonic and Latin races, and the dual influence can be traced in the architectural development: for, broadly speaking, Belgian architecture has been under French, and Dutch under German influence. The great rivers Rhine, Meuse, and Scheldt, with their many tributaries, supplemented by canals, form navigable waterways which have contributed so much to the prosperity of these countries.

ii. **Geological.**—Throughout the Netherlands there is abundance of clay which supplies beautiful red bricks, and this material of itself lent beauty to the style, more especially of domestic architecture, as seen in the façades of houses in the prosperous Mediæval towns, both of Holland and Belgium. Belgium lies on the northern flank of the Ardennes Mountains, and here beautiful marbles and stone are plentiful and were employed in Brussels, Antwerp, Ghent, and Bruges for churches and town halls, while granite-like stone from the hills was also used, as in the many-towered cathedral of Tournai. The extensive forests of the Ardennes and Fagnes districts supplied timber, not only for building, but also for the wood-carving for which Belgians are famous.

Holland, with its fen-like character and clay soil, produced only red bricks as building material, and this necessitated that flat and simple treatment peculiarly pleasing in a level country of rivers and canals, where sunlight and colour are reflected from the water.

iii. Climatic.—The climate of Belgium and Holland is similar to that of the south and east of England, but there are greater extremes of heat and cold. A comparatively grey climate gave rise to a liberal supply of windows in houses and to great traceried windows in churches and town halls. Wind from all quarters sweeps over the level stretches of these countries, which offer few natural obstacles to break its force; hence external solid shutters are used, more especially in the water-girt districts of Holland to the north, and belts of trees are planted to act as wind screens.

iv. Religious.—The Netherlands were at various times under the dominion of France, Germany, and Spain, and during the Middle Ages the influence of French Catholicism from the south was exercised on the ecclesiastical buildings of Belgium, and that of Germany from the east affected those of Holland, while the Spanish occupation also left its mark, chiefly in florid outbursts in architectural features and heraldic colour-schemes. Up to the year A.D. 1558, of the six bishoprics in the Netherlands, Utrecht and Liège were under the jurisdiction of Cologne; while Arras, Cambrai, Tournai, and Thérouanne owed allegiance to Rheims, and the architecture is evidence of their different affiliation.

v. Social.—Mediæval architecture marched abreast of the social progress of these intrepid and industrious people, and the independent towns rivalled each other in the arts of war and peace, much as they did in Italy. Guild houses and town halls of great magnificence, large in conception and rich in detail, reflect the wealth and prosperity of the merchants and weavers of such towns as Bruges, Antwerp, Louvain, Brussels, Ghent, Ypres, Courtrai, and Oudenarde in Belgium, and Amsterdam, Utrecht, Delft, Haarlem, and Dordrecht in Holland. The long civic roll of these and many other flourishing cities is a record of all that unflagging devotion to industrial pursuits, of intrepid undertakings on land and water, of commercial acumen and manufacturing enterprise which early made the Netherlands the rivals of England, not only in commerce, but also in sea power. The glory of Flemish looms has been for ever immortalised by the establishment at Bruges, by Philip the Good in A.D. 1430, of the famous "Order of the Golden Fleece."

vi. Historical.—Flanders, as a fief of France, became united to Burgundy (A.D. 1384) by the marriage of Philip the Bold, the first Duke of Valois, to Margaret, the heiress of Flanders, and then the Netherlands were brought together under the Dukes of Valois, descendants of the French kings, and the union was consolidated by Philip the Good (A.D. 1419–67). During the Middle Ages the cities of the Low Countries, the richest and most powerful in Europe, were constantly at war, but were also rivals in the pursuit of art. In A.D. 1477 the Netherlands fell to the House of Hapsburg by the marriage of Mary of Burgundy with Maximilian, afterwards Emperor of Germany. Early in the sixteenth century the Netherlands passed to Charles V (A.D. 1500–55), who was born at Ghent, became King of Spain in A.D. 1516 and Roman Emperor in A.D. 1519, and this introduced Spanish decorative influence. Celts and Romans, followed by Teutons and Franks with Burgundians, Spaniards, and Austrians, all took their turn in the possession of these much-coveted fertile countries, and their history is like a jig-saw puzzle in which one tries to fit in the foreign influences that have contributed to their chequered life and the development of their art.

2. ARCHITECTURAL CHARACTER

The architecture of Belgium during this period (A.D. 1200–1550) was governed by the same general principles as applied to all Gothic architecture in Europe (p. 300), but was of two types, that of the hilly part to the east partaking of German, and that of the low-lying part (Flanders) of French character, while Spanish features are also observable. Belgian architecture is impressive largely by reason of its towers, spires, belfries, and stepped gables (p. 475), which mostly rise from one dead level, and are unchallenged by diversities of rise and fall in the surrounding landscape, as in such dream-cities as Bruges; while no country is richer in the architecture of town, trade, and guild halls, which found its highest expression in the now devastated Cloth Hall, Ypres. Owing further to the variety of authorities in different districts, and the conflicting interests of powerful lords, including four dukes, seven counts, five lords, and a margrave, there was a lack of homogeneity, both in government and architecture, and thus social conditions were not conducive to the building up of a great national style in that art which is more than any other a national product.

Dutch architecture, although somewhat resembling German, has a national character of its own. The Dutch character of simplicity is translated into the barn-like churches, and for this reason the church architecture of Holland is less varied than that of Belgium. This national tendency to plainness was emphasised by the use of brick, which was here the local building material, and in itself with its beautiful texture made for simplicity of general treatment and outline. Effect was produced by the colour masses of red brick rising from a low, level country, and bathed in sunshine reflected from many waters. Many of the fittings in the large and lofty churches of the fifteenth century have, however, been destroyed owing in part to iconoclastic zeal, and also to the adaptation of old churches to Protestant forms of worship, by which the dominant idea of the altar in the sanctuary was superseded by the pulpit in the nave, with pews ranged round it, regardless of the position of the sanctuary.

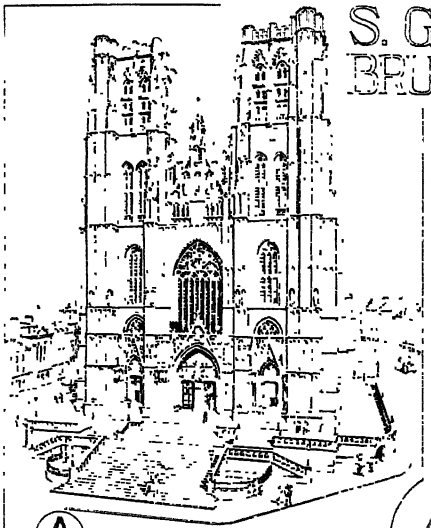
3. EXAMPLES

ECCLESIASTICAL ARCHITECTURE

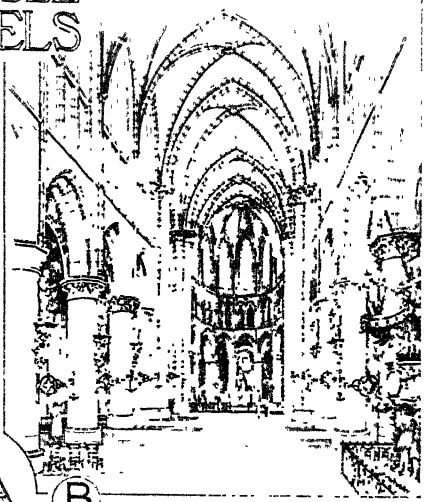
Tournai Cathedral (A.D. 1066–1338) illustrates the styles of three successive periods, and is largely built of the famous black Tournai marble. The nave is Romanesque, the circular-ended transepts (p. 479 B), with four towers and the central lantern, are Transitional (A.D. 1146), and the choir, with complete chevet, is fully developed Gothic, very light and elegant in character after the French manner. The Tomb of S. Piat is a good example of the florid architecture of the period (p. 480 G).

S. Gudule, Brussels (A.D. 1226–80) (p. 471), depends largely for effect on its elevated site and its two fine western towers (A.D. 1518). The blind traceried windows of these towers are conspicuous instances of the use in ornament of features which, in their origin, were constructive. The choir (A.D. 1226) is generally considered the earliest Gothic work in Belgium, and has large side chapels with wonderful stained glass, while the eastern termination has a half-developed chevet (p. 471 F). The vaulting and nave windows, with some fine glass, were added between A.D. 1350 and 1450.

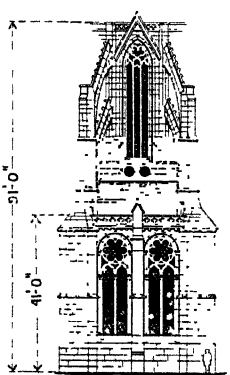
S. GUDULE BRUSSELS



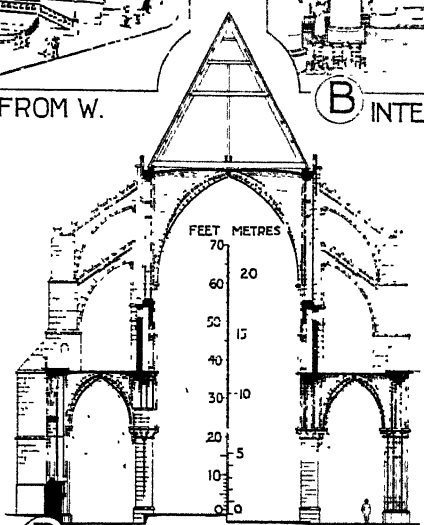
A EXTERIOR FROM W.



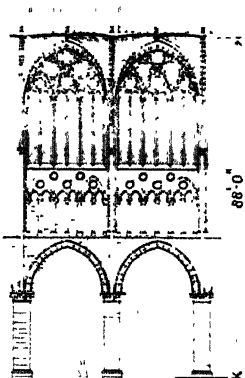
B INTERIOR LOOKING E.



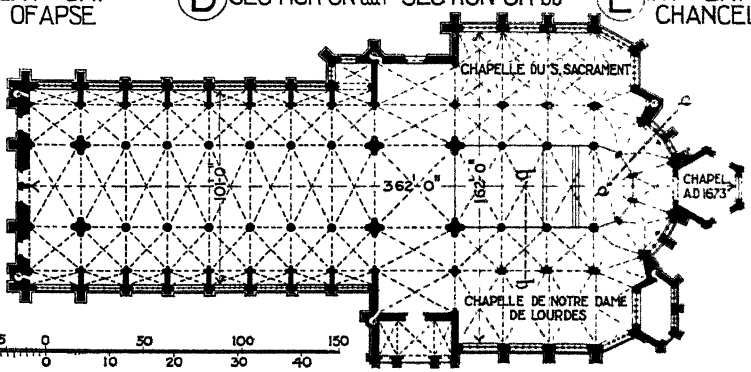
C EXT^L BAY OF APSE



D SECTION ON aa SECTION ON bb

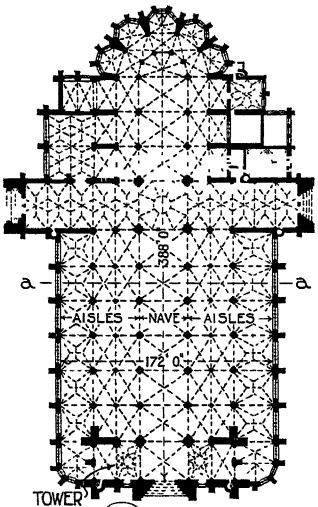


E INT^L BAYS OF CHANCEL

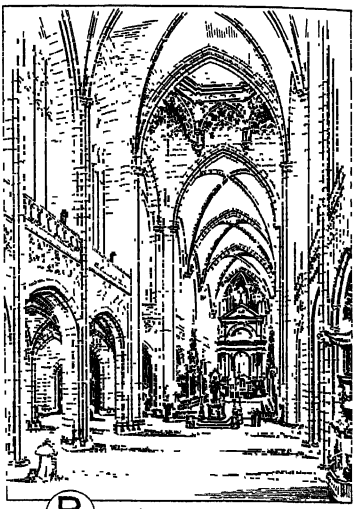


F PLAN

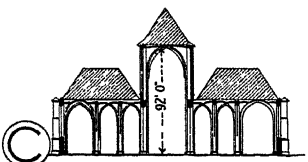
ANTWERP CATHEDRAL



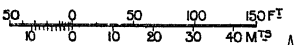
A PLAN



B INTERIOR LOOKING E.



C SECTION a-a



D EXTERIOR FROM N. W.

Antwerp Cathedral (A.D. 1352–1411) (pp. 304 H, 472), the most impressive church in Belgium, is remarkable for nave and triple aisles, narrow transepts, and a lofty clear-story containing huge windows of stained glass (p. 472 B, C). The west front (A.D. 1422–1518) (p. 472 D), with its one immense tower and spire, 400 ft. high, is graceful in the florid taste of the period, and if a companion tower had been carried up to the same dominating height, they might have dwarfed the body of the Cathedral itself. Here the curious bulbous turret over the crossing is a feature due to the Spanish occupation.

Bruges, Ypres, and **Ghent Cathedrals** all have their special characteristics of different periods, and in this lies their historic charm.

Notre Dame, Dinant (thirteenth century), nestles picturesquely beneath the rocky citadel, and with its bulbous spire formed a pleasing picture across the bridge over the Meuse, before this familiar feature was destroyed by the Germans.

The **Chapelle du Saint-Sang, Bruges,** designed as a reliquary shrine, is a miniature church in two storeys, of which the lower dates from A.D. 1150 and the upper from the fifteenth century, while the doorway and staircase are frankly Flamboyant. Here again, as often in Belgium, we have, side by side, the work of different periods.

Haarlem, Utrecht, and **Dordrecht Cathedrals** are in the true Dutch style, with warm-coloured bricks externally and barn-like internally, an effect which is emphasised by the whitewash due to the Protestant dislike of colour and ornament. They owe much of their attraction to their picturesque situation by the water-side.

SECULAR ARCHITECTURE

The most arresting aspect of Belgian and Dutch architecture is its secular rather than its ecclesiastical development. The various municipal, commercial, and domestic buildings all reflect the independent and prosperous condition of the freedom-loving burghers of the Mediæval cities of the Netherlands. Town halls, guild houses, and trade halls of the free cities are the most distinctive buildings, and have an open and friendly appearance suited to a commercial community. They reached their highest development in the Renaissance period, and are in striking contrast to the stern and forbidding aspect of similar buildings in such Italian cities as Florence and Siena.

The **Beffroi, Bruges** (A.D. 1280) (p. 475 C), 352 ft. high, picturesque and commanding, forms a landmark for many miles, and has a famous peal of bells. Its chequered history is referred to by Longfellow :

> " In the market place of Bruges
> Stands the belfry old and brown ;
> Thrice consumed and thrice rebuilded,
> Still it watches o'er the town."

Here, as in many cities, the belfry was a distinguishing feature of independence, and signified an important privilege, often obtained by charter from the feudal lords. The massive lower storeys were frequently used as record offices, while the tower itself served as a watch-tower from which the bells rang out a summons to the citizens or a warning on the approach of enemies, or on an outbreak of fire.

The **Belfry, Ghent** (A.D. 1300–39), rises 400 ft. in the centre of a magnificent group of public buildings, ecclesiastical, military, municipal, and commercial, and a survey of the city from its summit is immortalised in

the words attributed to Charles V : " Combien faudrait-il de peaux d'Espagne pour faire un gant de cette grandeur ? "

The **Town Hall, Brussels** (A.D. 1401–55) (p. 475 E), has a typical Gothic façade, three storeys high, with mullioned windows and a profusion of statues, with a high roof, dormer windows, and a central tower with richly ornamented upper octagon. It is a stately municipal building, and the spacious hall on the first floor is larger than the Guildhall, London.

The **Ancient Bourse, Antwerp** (A.D. 1581 and since rebuilt) (pp. 479 F, 481), is a fine late Gothic structure with a court having a trefoil arched arcade.

The **Town Hall, Bruges** (A.D. 1377) (p. 475 F), reflects the importance of this northern depot of the Hanseatic League. The façade is embellished with traceried windows and statues of the Counts of Flanders in niches, all recently restored. The usual large hall on the upper floor has a timber roof of pendant type (A.D. 1402). The walls are now panelled with large frescoes representing rulers, artists, and great personages of Flanders, with the armorial bearings of the principal towns and trade guilds—a remarkable instance of modern artistic enterprise in so small a town.

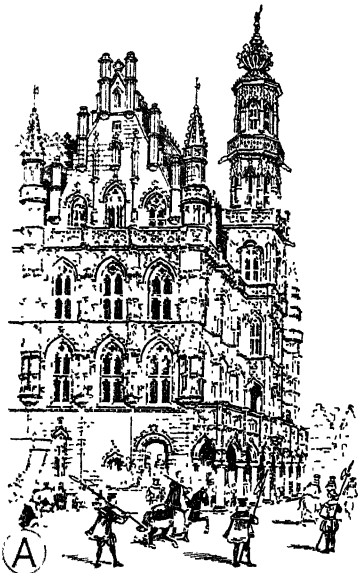
The **Town Hall, Ghent** (A.D. 1481) (p. 476 A), built in two distinct styles, is a study in comparative architecture, for the ornate Gothic façade (A.D. 1518–33) stands side by side with, and in striking contrast to, the Renaissance façade (A.D. 1595–1622).

The **Town Hall, Louvain** (A.D. 1448) (p. 475 G), with its florid Gothic carving, much damaged by the Germans in the Great War, the **Town Hall, Oudenarde** (A.D. 1525) (p. 475 A), with its notable chimney-piece (p. 479 E), and the **Town Hall, Middelburg** (A.D. 1512), have pointed windows, statues of counts in canopied niches, and steep, dormered roofs, while the **Town Hall, Courtrai**, still possesses its magnificent chimney-piece (p. 479 D).

The **Cloth Hall, Ypres** (A.D. 1200–1304) (p. 476 B), was the most famous and amongst the most ill-fated of all buildings erected during this period for mercantile purposes, and here was sold the cloth for which the country was renowned. Till its destruction in A.D. 1915 by invading Germans, it remained the most imposing monument of Mediæval commercial architecture, with its long, simple lines of repeated windows and statues, its high-pitched roof, and great central tower. The majestic simplicity of its long façade eclipsed in importance that of the later Town Hall by its side, thus emphasising the commanding position of commerce which was responsible for the development of civic life. On an inspection of the ruined cities of Flanders after the Armistice, the author was particularly impressed by the total demolition of this world-famous City of Cloth. The Cloth Hall was but a jagged fragment, the Hôtel de Ville was no more, the Cathedral a mere shell, and even the streets were pierced through to the drainage.

The **Staple House, Ghent**, with its small round-headed windows, dating from the beginning of the thirteenth century, the " **Vieille Boucherie,**" **Antwerp** (A.D. 1501), with its spacious pillared hall, now restored for use as a museum, the " **Grande Boucherie,**" **Ghent** (A.D. 1408), with bold open timber roof, and the " **Boucherie,**" **Ypres**, with Gothic gables, are other examples of Trade Halls.

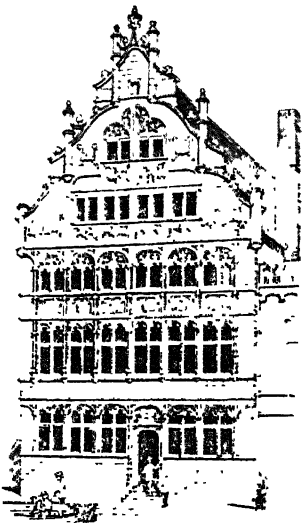
The **Skipper's House, Ghent** (A.D. 1531) (p. 475 B), with its traceried windows and other Gothic features, is probably the most beautiful among Belgian Mediæval guild houses. Many of these meeting-places for the powerful trade guilds belong to the Renaissance period when their prosperity was at its height, but a certain number still attest the earlier glories of the Netherlands.



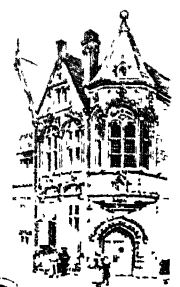
A TOWN HALL OUDENARDE



C THE HALLES & BELFRY: BRUGES



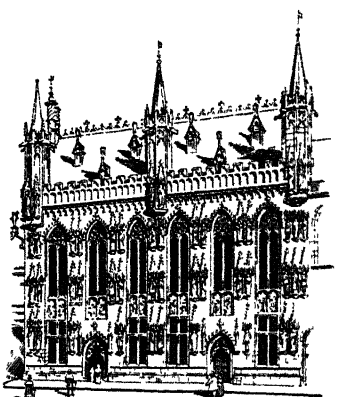
B THE SKIPPER'S HO. GHENT



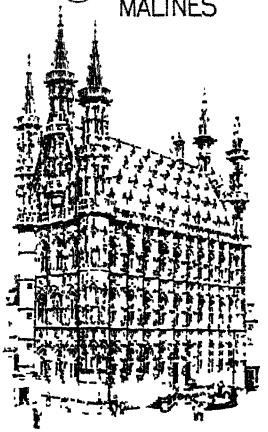
D OLD HOUSES MALINES



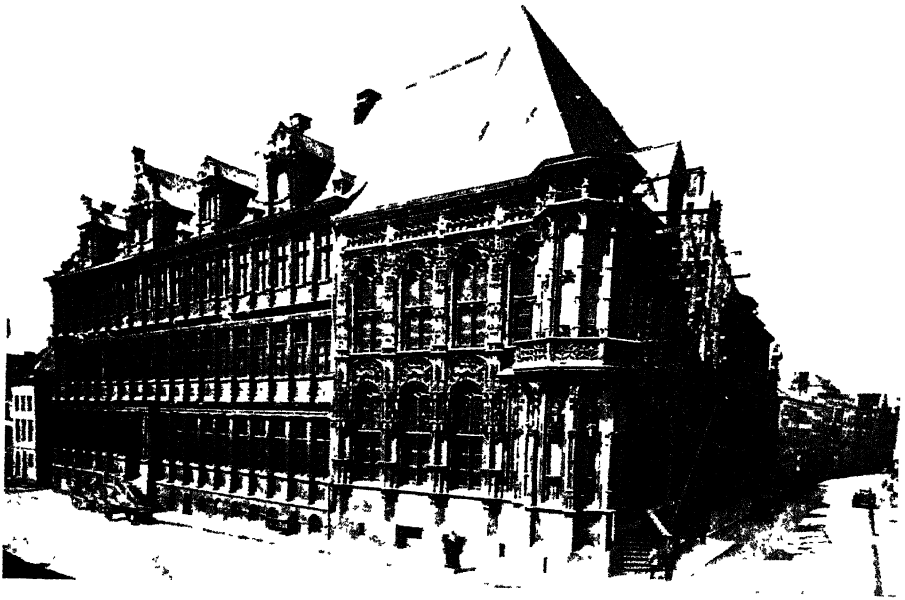
E TOWN HALL: BRUSSELS



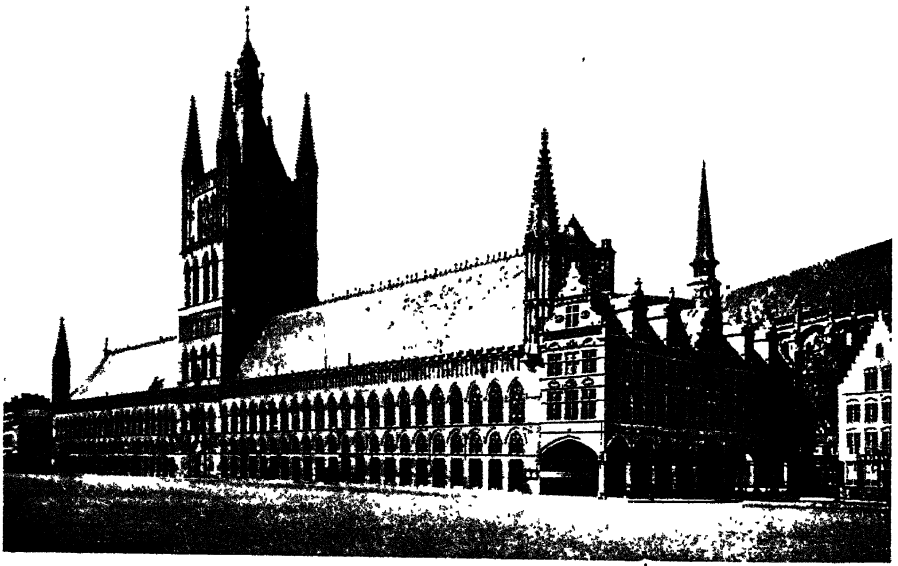
F TOWN HALL: BRUGES



G TOWN HALL: LOUVAIN



A. Town Hall, Ghent



B. Cloth Hall, Ypres (destroyed by the Germans)

The **Béguinage, Bruges**, which dates from the thirteenth century, is one of several of these peculiar institutions founded by S. Begga, daughter of a Duke of Brabant of the seventh century, and now practically confined to Belgium. Little but the porch of the church in the centre of this retreat remains of the Gothic period. These haunts of ancient peace, these quiet precincts, are planned with the church in the centre, and the little houses standing round it, all enclosed, like a Mediæval town, by a high wall, and here pious women in the garb of the thirteenth century spend their time between work and prayer. Once more we notice the all-prevailing love of freedom, for the sisters take no vow of poverty or of absolute seclusion.

The **Béguinage, Amsterdam**, is another of these quiet settlements in a noisy city, where stand quaint houses, and the sisters still flit to and fro, but their tiny church is now devoted to English services.

The **Castle, Antwerp**, now known as the "Steen," dates in part from the tenth century, and still has portcullis, dungeons, "oubliette," and chapel, although the interior now serves as a museum.

The **Castle, Ghent** (rebuilt A.D. 1180), formerly belonging to the Counts of Flanders, has been judiciously restored, so as to give a vivid impression of the disposition and use of the various parts of a complete, fortified castle of the Middle Ages. It stands on an oval site on the banks of the Lys, and is defended on the land side by a gatehouse with octagonal towers. A defensive outer wall surrounds the castle ward, in which rises the usual four-storeyed donjon or keep, with adjoining hall and living-rooms—an excellent example of the military Gothic of the period.

The **Merchants' Houses** (p. 475 B, D) with their many-windowed façades, crow-stepped gables, and projecting cranes, which stand along the quays and water-ways, are, much as in Venice, of that flat, simple treatment which is made more picturesque by its coloured reflection in the still waters of the canals, while here the warm red bricks give a welcome glow of colour in the grey northern climate.

4. COMPARATIVE ANALYSIS

A. **Plans.**—Church plans with a chevet as at Bruges, after the French model, were generally short in proportion to their width, and the most marked development in this respect may be seen in the seven aisles of Antwerp Cathedral (p. 472 A). The large lateral chapels at the sanctuary end of S. Gudule, Brussels, are also indications of the tendency towards unusual width (p. 471 F). A single western tower, as at Bruges, is often found, perhaps due to German influence.

B. **Walls.**—The long, unbroken façades of secular buildings, probably originally regulated, as in Venice, by the even margins of the water-ways, present such symmetry and regularity as to appear hardly Gothic in character. The walls, whether of stone or brick, were often elaborated by tracery work forming frames and hoods, either to single or grouped windows; while sometimes, as in Bruges Town Hall (p. 475 F) and the Cloth Hall, Ypres (p. 476 B), the wall space was covered with statuary in niches.

C. **Openings.**—Arcades of churches generally had cylindrical piers with sculptured capitals supporting pointed arches (p. 471 B), but sometimes there were piers without capitals (p. 472 B); external arcades were few, as was natural in the north, although sometimes met with in courts (pp. 479 F, 481). Arcades are occasionally very richly filled in with cusping (pp. 479 C, 480 G). Doorways, when there was a western tower, were placed

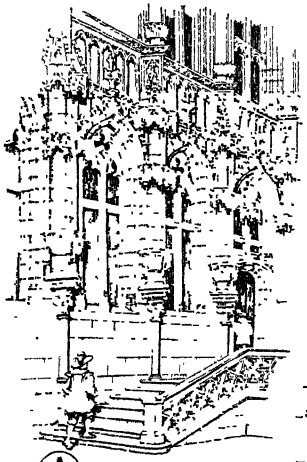
laterally in the aisle, as in Germany, but also occur in the west façade between towers after the French fashion, as at Brussels (p. 471 A). The traceried windows, more especially of town, guild, and trade halls, are ornamented with sculpture, and their repeating similarity and regularity in position are marked features of these important buildings (pp. 472 D, 476 A, 479 A).

D. Roofs.—Roofs are steep to throw off rain and snow, and are either hipped (pp. 475, 476) or have crow-stepped and traceried gables of picturesque outline. Vaulting followed on French lines, and was also carried out in secular buildings, as at Antwerp (p. 479 F). Numerous turrets and bold chimney-stacks, combined with tiers of dormer windows, are in keeping with the profusion of ornament on the walls below.

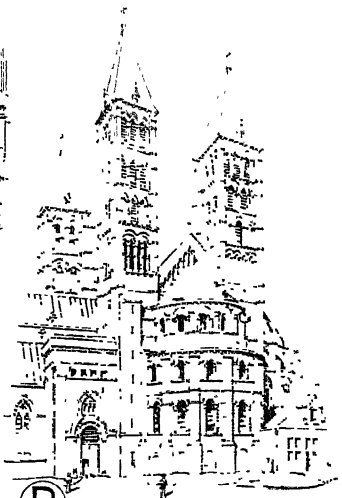
E. Columns.—Columnar piers in churches, as exemplified in S. Gudule, Brussels (p. 471 B), are preferred, as in France, to clustered piers. Statues of saints are often attached to the columns of the nave arcade (p. 471 B). A peculiar feature is noticeable in some arcades, as at Liège Town Hall, where a column is omitted between two arches which are supported instead by means of a long keystone from a concealed arch behind, while other columns have a distinctly Spanish character (pp. 479 F, 481).

F. Mouldings.—Coarse profusion is characteristic of Belgian Gothic mouldings, which possess neither the vigour of the French nor the grace of the English style.

G. Ornament.—Belgium is rich in sculptured ornament in wood and stone, for which indeed the craftsmen of the Low Countries have always been famous. This was applied not only to buildings, but also to tombs (p. 480 G), shrines, screens (p. 479 G), choir stalls, altars (p. 480 C), triptychs, and Calvaries. The human figure is prominent in decoration; but whereas in France sculptured figures of saints were grouped around the recessed doorways of cathedrals, in the Netherlands statues of the Counts were spread between the windows, across the façades of town and trade halls. S. Vaudru, Mons, has blue stone ribs supporting red brick vault-panels as a scheme of constructive decoration, while S. Jacques, Liège, is decorated with fresco paintings, as are many other churches. The Screen, Lierre (A.D. 1535) (p. 480 E), is an elaborate composition of arcade, clustered columns, carved capitals, pointed arches, flamboyant blank tracery, statues under pinnacled canopies, and open parapet with ornate rood loft in the centre. The tabernacle, S. Pierre, Louvain (p. 480 A), was one of those elaborate sacrament-houses specially favoured in Germany. Hexagonal on plan, the lower part has a recess to contain the pyx or box in which was deposited the consecrated Host. The upper part is fashioned as an elaborate spire ornamented with delicate tabernacle work and soaring amid a mass of crocketed pinnacles to a height of 50 ft. The tabernacle at Léau is a Gothic-like structure clothed in Renaissance detail (p. 672). The Tomb of Princess Mary of Burgundy (A.D. 1495) in Notre Dame, Bruges, a beautiful late Gothic monument, has a delicate archaic recumbent figure, in chased and gilded copper on a marble sarcophagus, with sides faced with Gothic arches and niches elaborated with enamelled armorial bearings. This tomb is in strong contrast to the early Renaissance tomb of the Duke of Burgundy by its side. The font, Hal (p. 480 B), is an elaborate piece of ornamental craftsmanship, of which there is a copy in the Victoria and Albert Museum, while the well-head, Antwerp (p. 480 F), by Quinten Matsys, is a piece of metalwork which shows how the Flemish excelled in working this material. The world-famous Shrine of S. Ursula, Bruges (A.D. 1489) (p. 480 D), is one of the



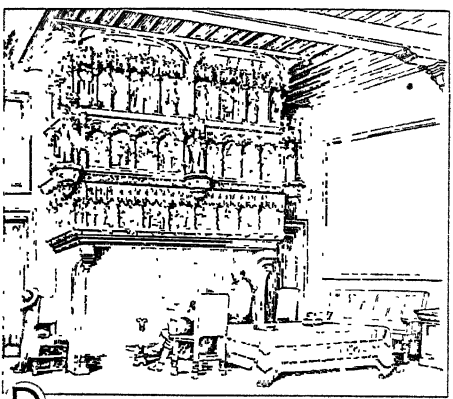
A WINDOWS
TOWN HALL: LOUVAIN



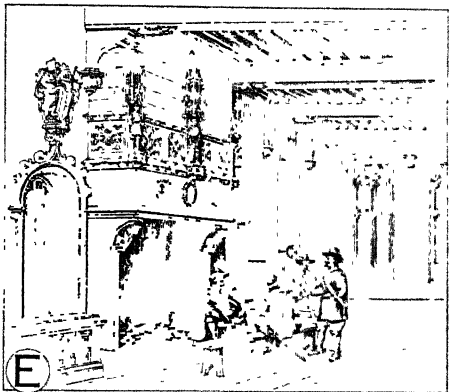
B S. APSE: TOURNAI



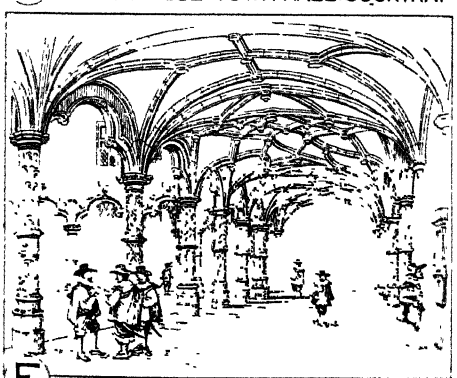
C ARCHWAY
S. JACQUES: LIEGE



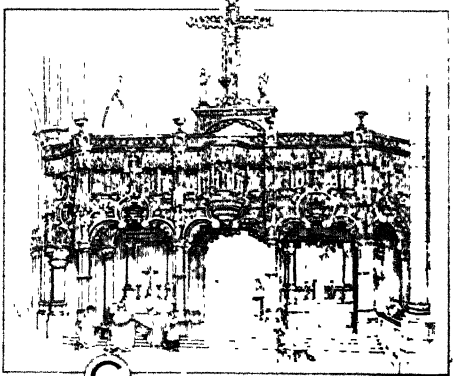
D CHIMNEY-PIECE. TOWN HALL. COURTRAI



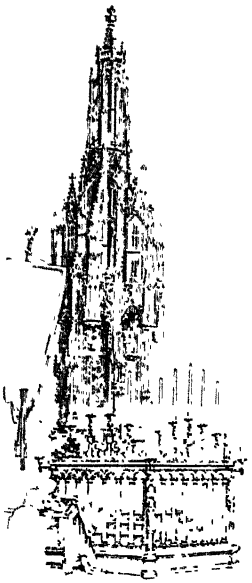
E CHIMNEY-PIECE: TOWN HALL OUDENARDE



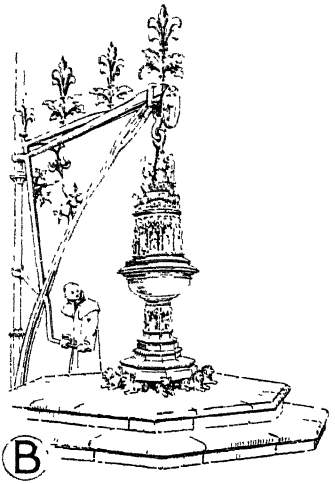
F ARCADE & VAULTING: THE BOURSE: ANTWERP



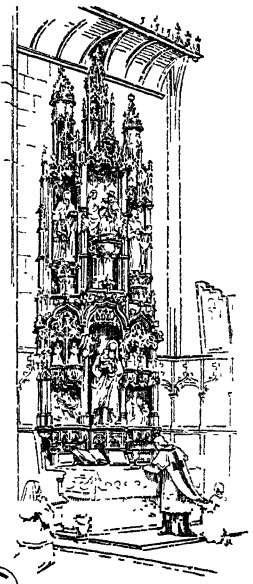
G SCREEN: AERSCHOT



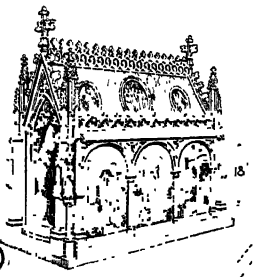
A TABERNACLE
S PETER LOUVAIN



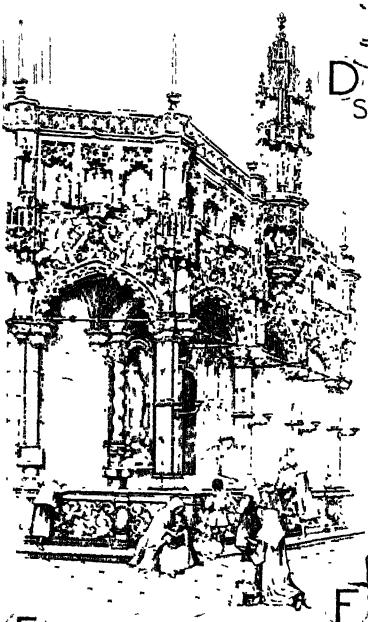
B FONT: NOTRE DAME: HAL



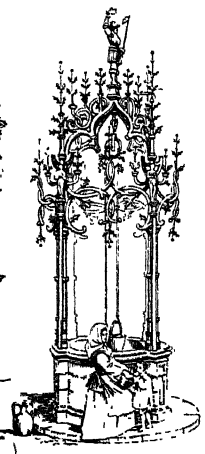
C ALTAR. S. VAUDRU · MONS



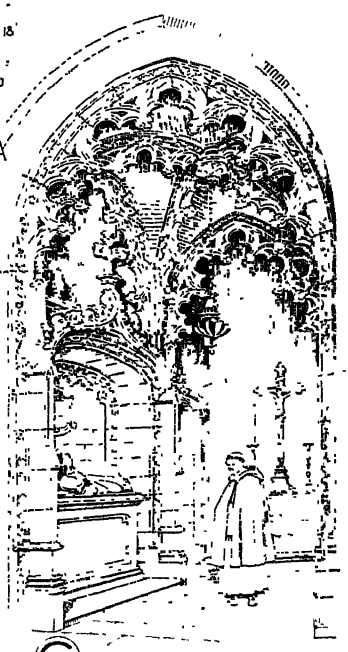
D SHRINE OF S.URSULA
HOSPITAL S JOHN. BRUGES



E STONE SCREEN: LIERRE



F WELLHEAD: ANTWERP
[BY QUINTEN MATSYS]

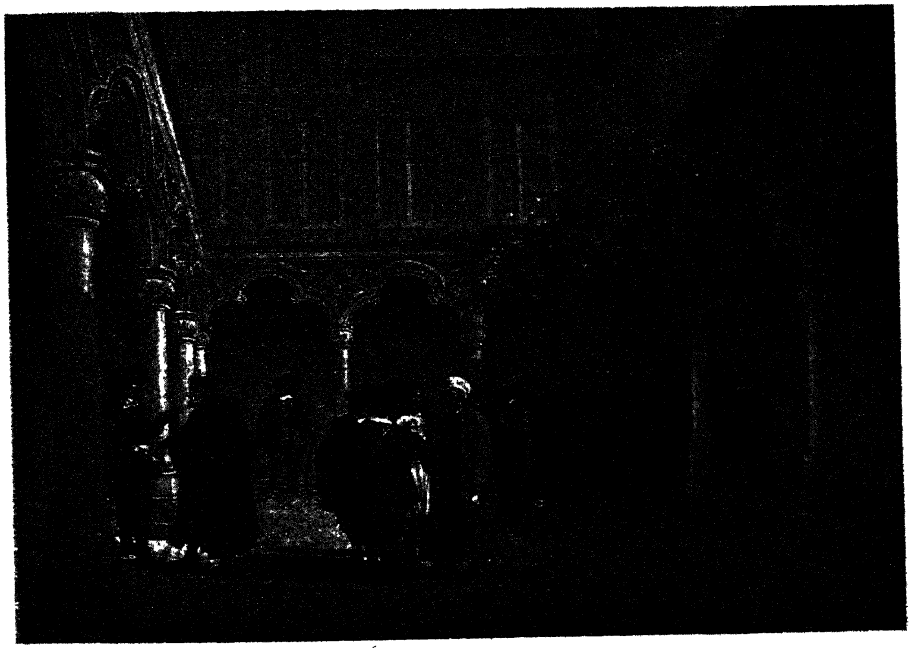


G TOMB: S. PIAT: TOURNAI

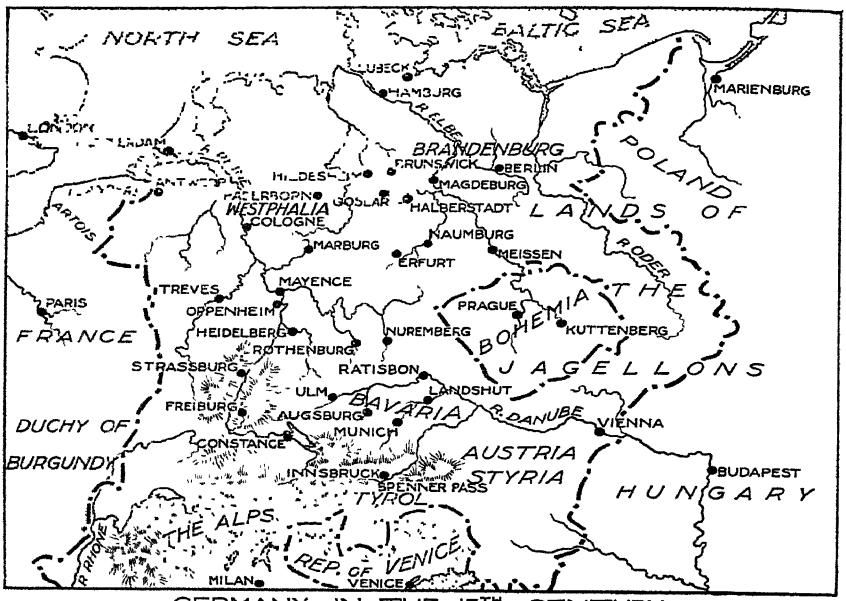
most remarkable and delicate examples of Mediæval art carried out in the beautiful craftsmanship of the period. The Châsse of the Saint is formed as a Gothic chapel in miniature, with arcaded and traceried sides, buttresses, pinnacles, and steep roof, all of which are the framework for those marvellous miniature paintings, representing six episodes from the life of the Saint, which form the masterpiece of Memling. In such an exquisite gem as this reliquary of S. Ursula one may study, as perhaps nowhere else in the world, a perfect combination of architectural features, craftsmanship, and painted scene.

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THE ANCIENT BOURSE, ANTWERP



GERMANY IN THE 15TH CENTURY

GERMAN GOTHIC

(See p. 288 for German Romanesque.)

1. INFLUENCES

i. Geographical.—The country in Central Europe, formerly a collection of states which became the German Empire, was, by its geographical position, in contact with the architecture of neighbouring countries. The chief influence on German Gothic architecture came from France and is conspicuous in the Rhine Provinces and Westphalia, notably in Cologne Cathedral and other churches, castles, town halls, and domestic buildings along the Rhine, which was always an important highway of commerce. Elsewhere in Germany geographical influence was of less consequence in the Gothic period.

ii. Geological.—We have dealt with geological influence under Romanesque architecture (p. 288), and this influence obviously remains fairly constant in this period. The northern plains of Germany provide little building material but brick, which gives a special character to the architecture of the north, particularly in the districts of the Oder and Elbe. In the centre and south and along the Rhine, excellent stone was found; while timber from the great forests in these regions gives an individuality to domestic buildings, as in wooded districts of England.

iii. Climatic.—The climate, referred to in considering Romanesque architecture (p. 288), is without the fierce sun of the south, and therefore

admitted of large traceried windows, as in England and France, but the snows of severe winters rendered steep roofs a necessary and special characteristic.

iv. Religious.—The most salient feature, apart from monastic establishments, in the religious life of Mediæval Germany before the Reformation, was the exercise of civil power by prince-bishops, who included in their ranks Electors of the Holy Roman Empire, and whose principalities were only finally swept away by the European upheaval during the French Revolution. The activities of these powerful prelates are evidenced in numerous churches, and costly tombs erected by them or in their honour. Papal abuses and disputes led inevitably to the revolt against the authority of Rome, until in A.D. 1517 Luther nailed to the church door at Wittenberg his famous theses against indulgences. The Reformation divided Germany into the Protestant north and Catholic south, but churches were not damaged, as in Puritan times in England.

v. Social.—For a right understanding of the types of architecture peculiar to different districts it must be remembered that Germany was not one, but many states, among which were the provinces under the Houses of Luxemburg, Wittlesbach, and Hapsburg; ecclesiastical states, such as Münster; Imperial cities like Strassburg and Ulm, while the "Hanseatic League," an alliance of the great commercial towns of North Germany, such as Lübeck and Hamburg, exercised considerable influence on the peaceful arts, and in the fourteenth century the power of the League secured to the larger towns comparative independence, which necessitated the erection of municipal buildings. Then there was the Rhineland on the French frontier, across which came the Gothic architecture which in castle, convent, and church played its part in the folklore of the Rhine. Thus the style of architecture varies with the locality, just as does the constitution of the various states and cities. Trade guilds during this period acquired great importance and built elaborate halls, while Freemasons have been credited with much influence in the design and working out of the Gothic style (p. 245). The feudal system in Germany was so complicated by the existence of the many principalities of differing degrees of importance and independence that by the beginning of the sixteenth century any real relation between nobles and vassals had become merely nominal.

vi. Historical.—The tangled skein of German history in the Mediæval period is complicated by the successive rise and fall of imperial and royal dynasties, by the intrigues of princely and ducal houses of the various states to secure kingly power, and by the secular ambition of prince-bishops who combined the intolerance of ecclesiastical with the arrogance of secular tyrants. In the twelfth and thirteenth centuries Germany was the centre of the Western Empire, and under the Hohenstaufen Emperors long wars were carried on with the Lombard league of the north Italian towns (p. 254). After the fall of the Hohenstaufen Dynasty on the death of Conrad IV, the following years (A.D. 1254–73), known as the "Great Interregnum," were times of confusion and lawlessness, not conducive to progress in architecture. The house of Hapsburg came into power in A.D. 1273, and the general adoption of Gothic architecture from France coincides with that event and lasted till the reign of Maximilian I (A.D. 1486–1519), which marks the end of the Middle Ages.

2. ARCHITECTURAL CHARACTER

Gothic architecture in Germany was similar in general character to that in other parts of Europe (p. 300), and may be considered to have lasted from A.D. 1250–1500. The style, however, came direct from France and was not evolved from German Romanesque, and this method of its introduction may be due to the extent to which Romanesque building had been developed in Germany, where a preference for the ponderous Romanesque style had resulted in the adaptation of vaulting to new needs without resorting to the pointed arch and other Gothic features. The Gothic style was therefore only reluctantly adopted in the middle of the thirteenth century when it was near its zenith in France, but Romanesque precedents were long followed, and although the pointed arch appears in A.D. 1140 in Paderborn Cathedral, it was long before it supplanted the round arch of the Romanesque. In Northern Germany and in the valley of the Elbe the architecture was carried out in brick, and at Lübeck even window mullions and tracery were of brick, and this brick architecture, although more meagre in design than that of Lombardy, has the character due to the material.

The "hall" churches (*dreischiffige Kirche*) are a special characteristic of German Gothic, more particularly in the north, and in these the nave and aisles are approximately the same height, with the consequent absence of triforium and clear-story (p. 486 A). The only English cathedral of this unusual type is Bristol, although it occurs in the Temple Church, London (p. 325), and in some parish churches. Another distinguishing feature is a single western tower or western apse in place of the wide, sculptured doorways of French cathedrals, thus giving a totally different external appearance (p. 485 D). It has been suggested that this apse attached to the west end may have been derived from a detached baptistery; or it may have been for the use of the laity in cases where the eastern apse was devoted to conventual use.

3. EXAMPLES

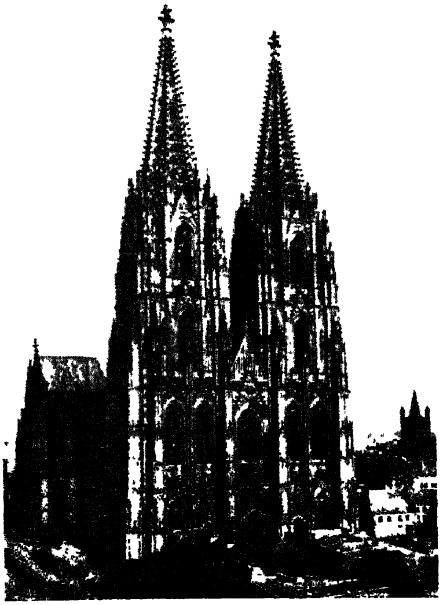
ECCLESIASTICAL ARCHITECTURE

S. Gereon, Cologne (p. 295), on the site of a circular tomb house, 126 ft. in diameter, erected by Helena, mother of Constantine, has an unusual grouping, recalling the tomb house at Aix-la-Chapelle. The straight-sided choir with its sacristy dates from the Romanesque period (A.D. 1075). The eastern apse and towers were added in A.D. 1160, while the ten-sided nave, 66 ft. by 55 ft., oval on plan, was built (A.D. 1219–27) in the Gothic style with pointed windows, eaves gallery, and a pyramidal roof.

Limburg Cathedral (A.D. 1213–42) is a fine Transitional church, and with its seven towers forms an imposing group above the River Lahn.

The Liebfrauenkirche, Trèves (A.D. 1227–43) (pp. 297, 490 A, B), forms part of the cathedral group, and is said to be a copy of Braisne Abbey Church, near Soissons. It is a Transitional building with both round and pointed arches; the cruciform upper part has clear-story windows and a fine vault, and there is an elaborately sculptured western doorway.

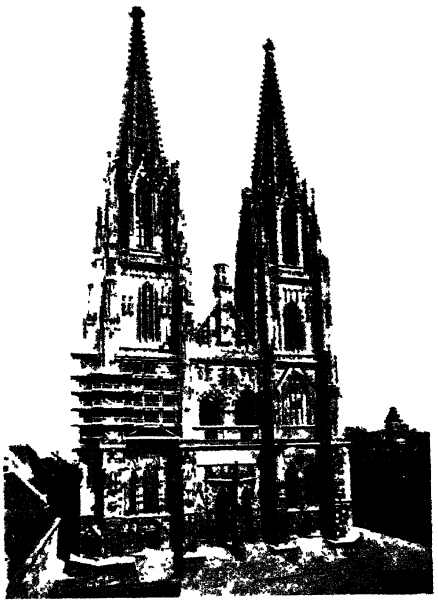
S. Elizabeth, Marburg (A.D. 1233–83) (p. 486), is the typical "hall" church in which nave and aisles are of equal height, and thus there is no triforium or clear-story. The plan has nave and aisles, western entrance between two towers, and apses at the ends of the transepts and sanctuary.



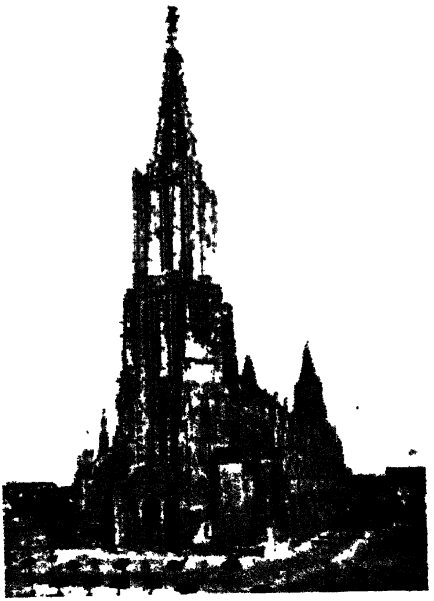
A. Cologne Cathedral: Façade



B. Cologne Cathedral: Nave

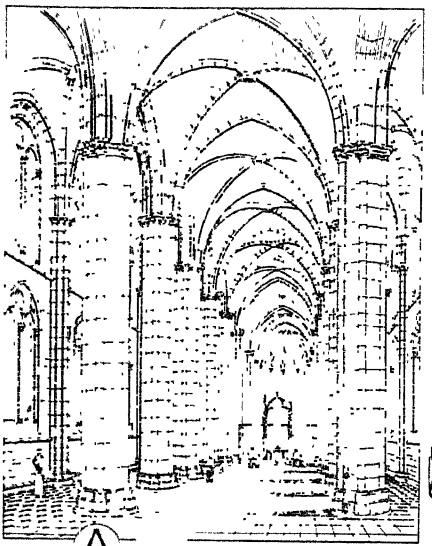


C. Ratisbon Cathedral

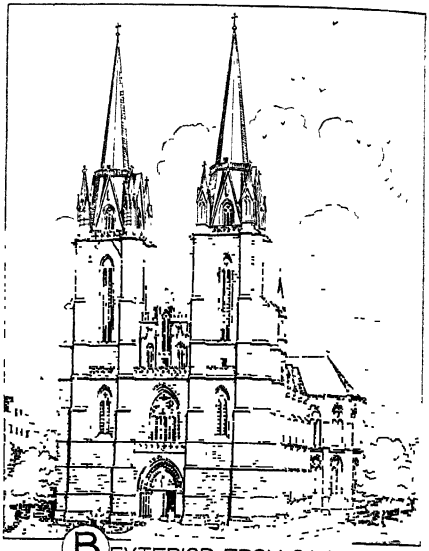


D. Ulm Cathedral

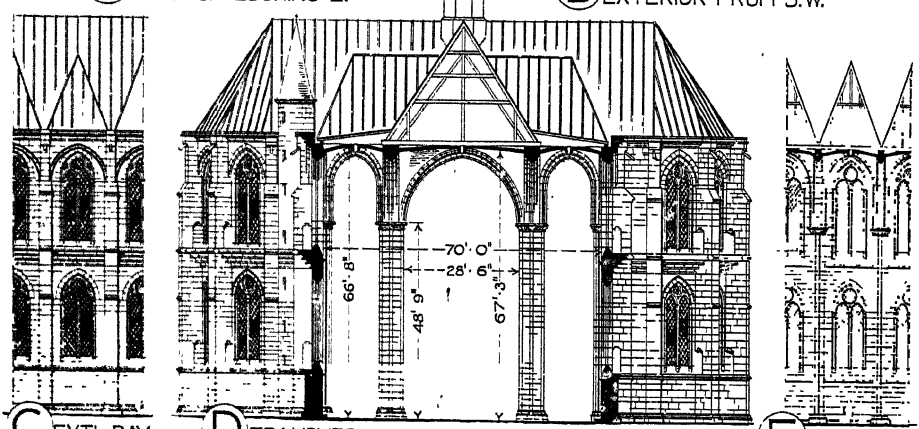
S. ELIZABETH : MARBURG



A INTERIOR LOOKING E.



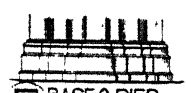
B EXTERIOR FROM S.W.



C EXTL BAY

D TRANSVERSE SECTION LOOKING E.

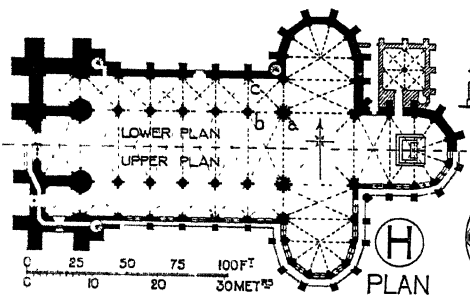
E INTL BAY



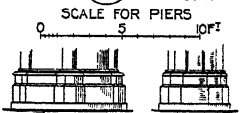
F BASE & PIER AT a



G PLAN OF PIER AT a.



H PLAN



J BASES OF PIERS AT b & c



K PLANS OF PIERS a b & c

The exterior is peculiar in having a continuous external walking way at the level of each stage of windows, carried right through the buttresses. Flying buttresses were unnecessary, and the interior has the appearance of a large columned hall (p. 486 A).

Cologne Cathedral (A.D. 1248–1322) (pp. 304 K, 485 A, B), the largest Gothic church of Northern Europe, covering about 91,000 square ft., is a conspicuous instance of the adoption of the details of a style, without having assimilated the spirit that created it. The huge plan has a width out of all proportion to its length, 468 ft. long by 275 ft. wide, and the nave, which has a clear span between the piers of 41 ft. 6 ins., is 150 ft. high, almost as high as Beauvais; while the double aisles are equal in width to the nave and there are two enormous towers at the west end. The aisled transepts, with entrances, project one bay more than at Amiens, and the eastern half of the church, which is a reproduction of Amiens in plan and dimensions, has an apsidal end and processional aisle and chevet of seven chapels. The building, which was only finished, according to the original design, between the years A.D. 1824–80, displays a lack of proportion and an absence of judicious disposition of parts; for the nave with its double aisles is disproportionately short for the width, the aisles are low in proportion to the height of the nave, while the twin western towers, overpowering in bulk at the base and monotonous in repetition of lace-like detail above, altogether dwarf the main building. In matters of the delicate adjustment of proportions, which test the greatness of a creation, German architects fall short of French masters. Cologne Cathedral nevertheless makes an imposing monument, as, with its great twin-towers 500 ft. high, it stands on the level plain of the wide Rhine valley.

The **Frauenkirche, Nuremberg** (A.D. 1354–61) (p. 490 C, D), is a "hall" church in the old market-place. Its immense roof covers nave and aisles, while its two-storeyed western porch is surmounted by a curious old clock with central figure of Charles IV and moving figures of the seven Electors, which appear at noon. The interior (p. 490 D) shows the equal heights of nave and aisles, separated by cylindrical piers with foliated capitals, encircled with figures, behind which spring the vaulting ribs.

S. Lambert, Hildesheim, S. Stephen, Mayence (A.D. 1257–1328), and S. Quentin, Mayence (A.D. 1450), are also "hall" churches, while Munich Cathedral, S. Barbara, Kuttenberg, and S. Martin, Landshut (A.D. 1404), are also of similar type but of later date.

Freiburg Cathedral (A.D. 1283–1330) has a remarkable single western tower and spire 385 ft. high similar to those of Cologne. It is square at the base, which contains the porch, octagonal in its second stage, and terminates in a lace-like spire.

Ratisbon Cathedral (A.D. 1275–1534) (p. 485 C) is regular in plan and has three eastern apses without ambulatory, in the German manner. The west front flanked by towers and open-work crocketed spires, only added in A.D. 1859–69, has a beautiful little triangular porch in the centre (A.D. 1482).

Ulm Cathedral (A.D. 1377–1477) (p. 485 D), spacious and lofty, is an instance, not uncommon in Germany, of excellence in masonry and poverty in design, for the smallness of the ratio of the supports to the area produces an unpleasing interior. The polygonal eastern apse is without ambulatory. The exterior has an arcaded eaves gallery, due to Romanesque traditions, and a great western tower and spire, 529 ft. in height.

S. Stephen, Vienna (A.D. 1300–1510) (pp. 304 J, 489), is a characteristic "hall" church in Austria, without clear-story or triforium, for the three aisles are nearly equal in width and height, and the great roof covers the church in one span. The transepts serve as entrance porches, one of which is carried up as a tower terminated by a splendid spire, less open than usual in Germany. The vaults are traceried and the windows still contain some original stained glass.

Lübeck Cathedral and the Marienkirche, Lübeck, well express the possibilities of design in brickwork, so usual in North Germany.

SECULAR ARCHITECTURE

Castles were erected in goodly numbers, as at Marienburg (A.D. 1280), and Meissen, Saxony (A.D. 1471), and the old fortified town of Rothenburg still retains its Mediæval walls, with defensive towers (p. 491 B).

The Town Halls (Rathhaus) at Brunswick, Hildesheim, Cologne, Halberstadt, Münster, Ratisbon (Regensburg) (p. 491 G), Ulm, and Lübeck, are prominent and impressive buildings in these semi-independent German towns, and, with the town gates in the Baltic provinces, are evidences of the prosperity of those times.

The Custom House, Nuremberg (A.D. 1498) (p. 491 E), now used as a warehouse, is remarkable, with three storeys in the walls and no less than six storeys in its high roof.

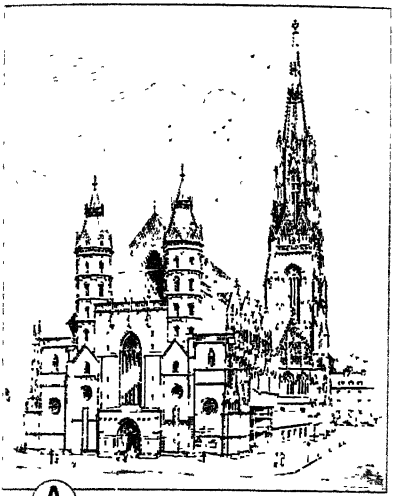
The old houses, Brunswick (p. 491 A) and Nuremberg (p. 491 D), and the Kaiserworth, Goslar (p. 491 C), are characteristic examples of the secular architecture of the period, while timber houses, in which a lower storey of masonry supports a timber upper part, were frequent, as at Erfurt (p. 492 A), Hildesheim (p. 492 C), and elsewhere.

Domestic architecture was marked by lofty roofs which frequently had more storeys than the walls, and were provided with dormer windows to make a through current of air for their use as a "drying ground" for the large monthly wash. The planning of the roof-ridge, either parallel with or at right angles to the street, considerably influenced design; thus in Nuremberg, where the ridge is generally parallel with the street, dormer windows are plentiful and party walls are finished off at the roof level with artistic treatment, while at Landshut and elsewhere the ridge at right angles to the street results in gables of great variety of design, often with a hoist in the top gable to raise goods from the ground level.

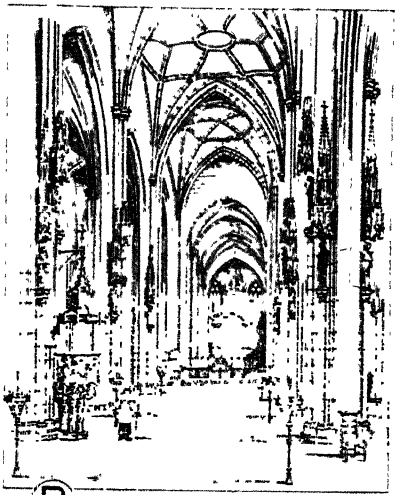
4. COMPARATIVE ANALYSIS

A. Plans.—Church plans are of varied types, and the larger number were derived from German Romanesque churches with apsidal ends, usually semi-octagonal. They are found not only both east and west, as at Naumburg, but also at ends of transepts, when they are known as triapsal plans, as in S. Elizabeth, Marburg (p. 486 H). Another type of plan is the result of French influence, and has the chevet, as at Cologne, Magdeburg, Lübeck, Freiburg, and Prague. Twin western towers, as at Ratisbon Cathedral (p. 485 C), and single western towers, as at Ulm, are found (p. 485 D); while in later buildings a central tower crowns the crossing, as in some English cathedrals. Entrances are often small and insignificant, and are on the north and south instead of at the west, and are formed in transepts and dignified with towers, as in S. Stephen, Vienna (p. 489 A, G).

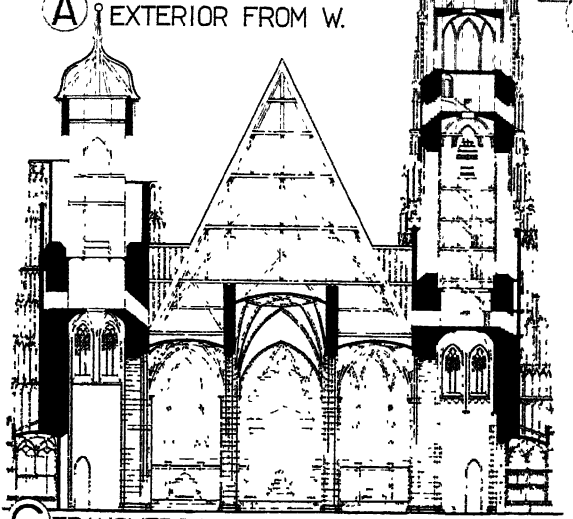
S. STEPHEN, VIENNA



A EXTERIOR FROM W.



B INTERIOR LOOKING E.



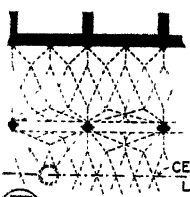
C TRANSVERSE SECTION THRO' TRANSEPTS



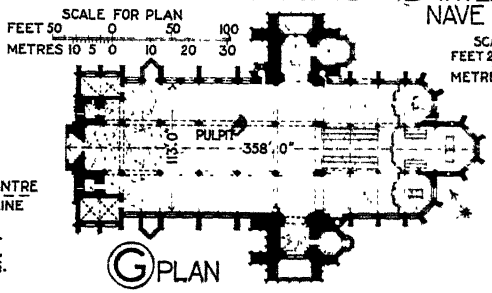
D INTERNAL NAVE BAY



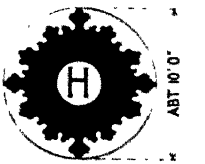
E EXTL NAVE BAY



F PLAN & NAVE & AISLE VAULTG.



G PLAN



PLAN & NAVE PIER

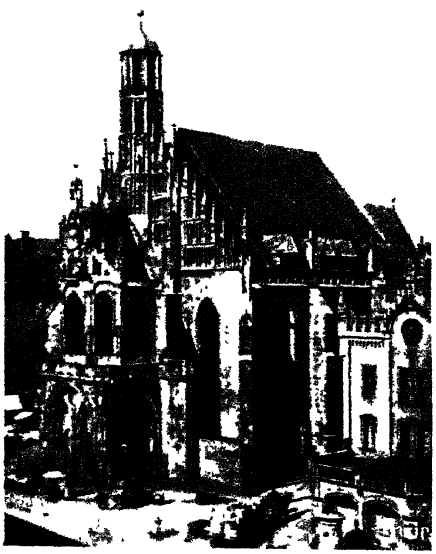


A. Exterior from S.E.

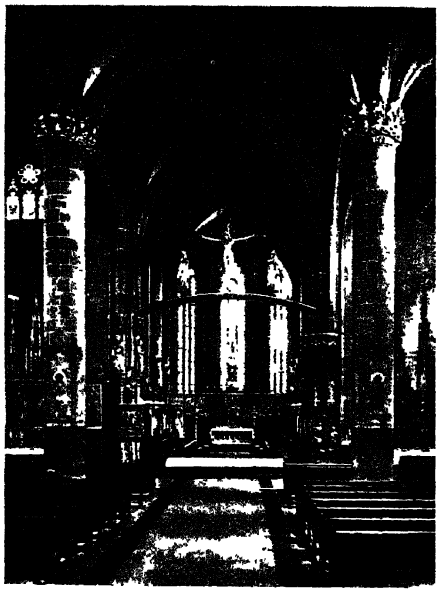


B. Interior

Liebfrauenkirche, Trèves

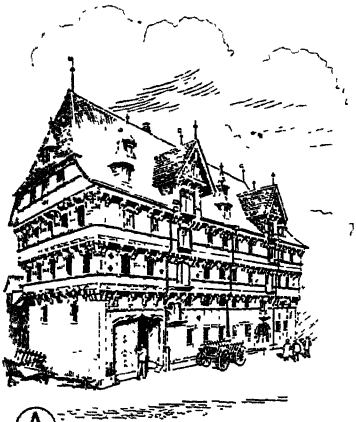


C. Exterior from S.W.

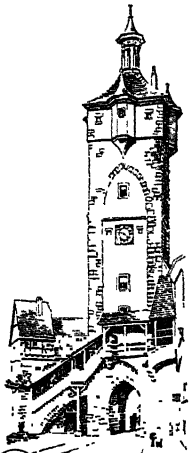


D. Interior looking E.

Frauenkirche, Nuremberg



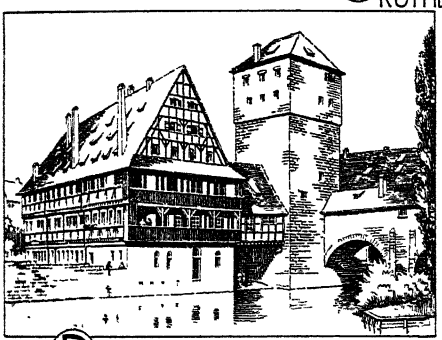
A OLD HOUSE: BRUNSWICK



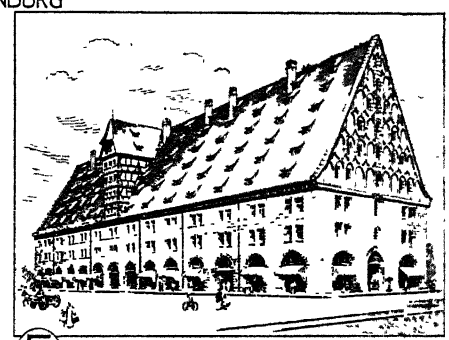
B KLINGENTOR ROTHENBURG



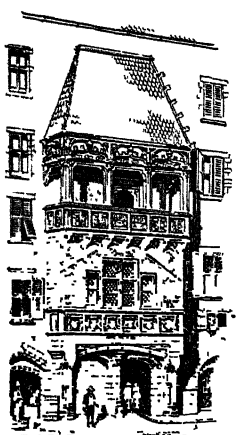
C THE KAISERWORTH: GOSLAR



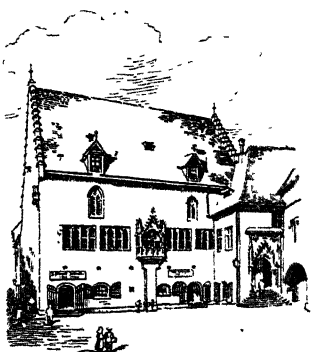
D OLD HOUSES: NUREMBERG



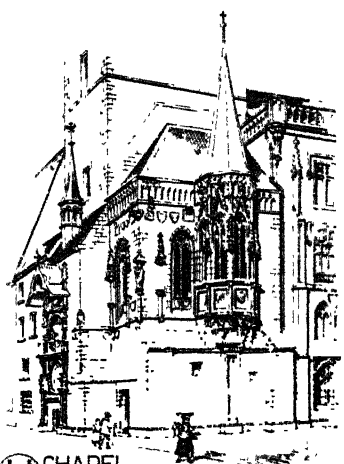
E THE CUSTOM HOUSE: NUREMBERG



F WINDOW: FURSTENBURG
PALACE: INNSBRUCK



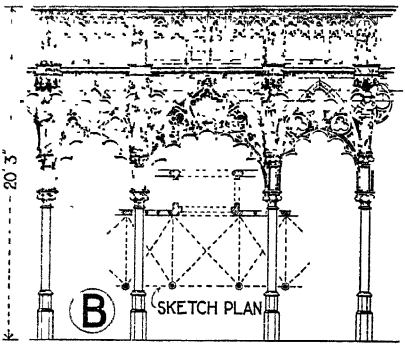
G RATHHAUS REGENSBURG



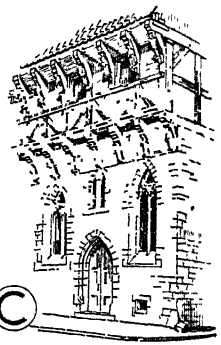
H CHAPEL
OLD RATHHAUS: PRAGUE



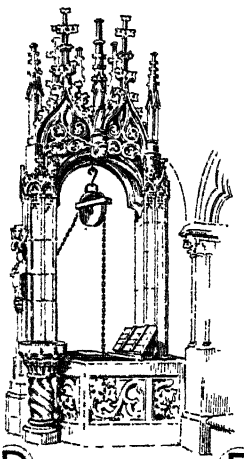
A TIMBER HOUSE ERFURT.



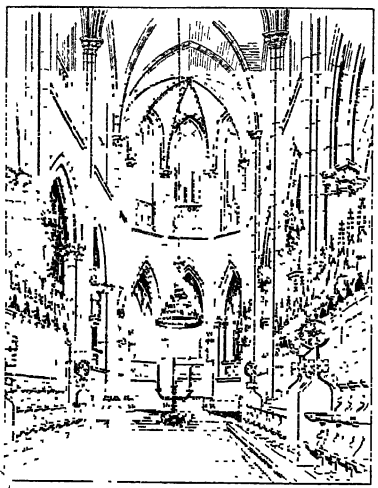
B STONE SCREEN : OBERWESEL.



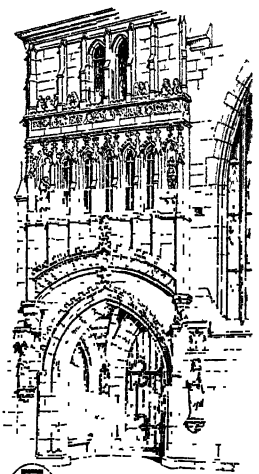
C HOUSE : HILDESHEIM.



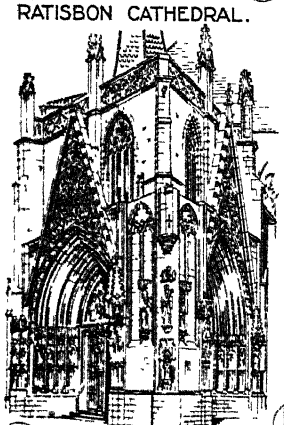
D HOLY WELL RATISBON CATHEDRAL.



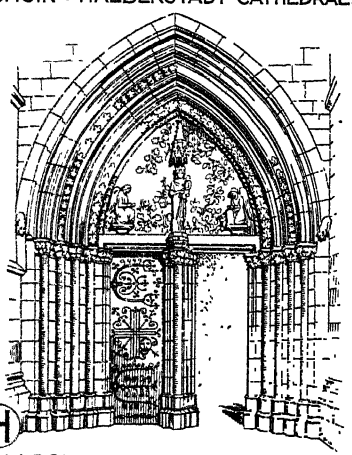
E CHOIR : HALBERSTADT CATHEDRAL.



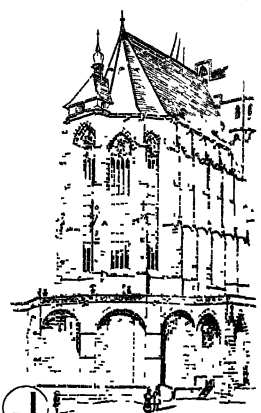
F SOUTH PORCH S. LAWRENCE, NUREMBERG.



G PORCH : ERFURT CATH.



H W. PORTAL : S. ELIZABETH, MARBURG.



J CHOIR : ERFURT CATH.

B. **Walls.**—Apsidal galleries of the Romanesque style were reproduced over wall surfaces without reference to their origin and purpose. Tracery was employed on both outer and inner wall surfaces, and wall tracery was often carried up in front of inner traceried windows and across gables, as at the Lorenzkirche, Nuremberg. Towers with spires were much used, but the junction of spire and tower was often so little marked as to render the outline, though ornamented, somewhat confused and unsatisfactory (p. 485 C). Open tracery spires (p. 485 D), complicated alike in design and construction, are favourite features and were probably suggested by the numerous turrets with many openings used in Romanesque buildings. The typical examples are Freiburg, Ratisbon (p. 485 C), Cologne (p. 485 A), and Vienna Cathedrals (p. 489 A).

C. **Openings.**—Nave arcades in "hall" churches were necessarily lofty, owing to the height of the aisles, such as those in S. Stephen and S. Quentin, Mayence, the Frauenkirche, Nuremberg (p. 490 D), S. Elizabeth, Marburg (p. 486 A, E), and S. Stephen, Vienna (p. 489 B, D). Doorways, though frequently unimportant, as at Marburg (p. 492 H), are sometimes elaborated with sculpture (p. 492 F), especially under French influence, as at Cologne (p. 485 A) and Erfurt (p. 492 G). Traceried windows, like the nave arcading in "hall" churches, are of excessive height, as in the choir, Erfurt (p. 492 J), but sometimes in the lofty aisles they are in two tiers, as at Marburg (p. 486 C, D). Clear-story windows, when employed, start almost immediately above the nave arcade so as to provide a great expanse of stained glass. Tracery was much elaborated and double-traceried windows are not uncommon. Rose windows of intricate design were popular, as in the Lorenzkirche, Nuremberg; while oriel windows to give an additional outlook are much used in domestic architecture, as in the Kaiserworth, Goslar (p. 491 C), S. Sebald's Parsonage, Nuremberg, and the Rathhaus Chapel, Prague (p. 491 H).

D. **Roofs.**—Vaulting, which was usually employed for churches, was excellent both in proportion and construction. One square nave vaulting bay frequently corresponds with two in the aisle, but vaulting in oblong bays afterwards became general, as at Freiburg, Ratisbon, Cologne (p. 485 B), Oppenheim, and elsewhere. The special German feature is the immense roof of the "hall" church which, in one span, covers the nave and lofty aisles (pp. 489 C, 490 C). The retention of the quaint tower roofs of the Romanesque period was often another distinctive feature in an otherwise Gothic exterior.

E. **Columns.**—Nave piers, with or without capitals, as at Augsburg, were employed in preference to columns of French Gothic type, and owing to the height of the aisles they assumed the appearance of lofty posts (pp. 486 A, 490 B, D) supporting the spreading vault. Capitals are frequently carved (p. 495 A, B, D, E) and exhibit skill in technique rather than design.

F. **Mouldings.**—The mouldings, particularly of the later period, indicate a desire for intricacy rather than simplicity, and this found expression, as also to some extent in England and France, in the complicated system of "interpenetration" of different sets of mouldings, which, appearing and disappearing in the same stone, required great skill in stone-cutting for their effective execution (p. 495). The search after effect further led to exaggerating the size of distant features, such as the roof pinnacles at Cologne: thus scale was sacrificed to detail, whereas in England and France the size of features was subordinated to the general proportions of the building.

G. **Ornament** (pp. 492, 495).—Sculpture was carried out much as in

France, and the triangular porch of Ratisbon Cathedral, with its saints on columns beneath traceried canopies, is an instance of the richness of detail occasionally lavished on church porches (p. 485 C). The carving is better in execution than design, and there was a tendency towards the exact reproduction of natural foliage, such as interlaced boughs and branches of trees, which appealed to the craftsmen, who were adepts at executing interpenetrating mouldings. This idea was even carried into the "branch-tracery" of later Gothic windows, where, again, technical skill is more evident than artistic creation and grace of outline. The enforced use of brick in the north eliminated sculpture, and moulded and coloured brick took its place in decoration. Tabernacles or sacrament houses, dating from the time when the placing of the consecrated Host above the altar was discontinued in Germany, gave ample scope for German decorative art. They are lofty, spire-like structures, tapering up in many stages of carved wood or stone with traceried openings, pinnacles, statues, and canopies, all in miniature, to contain the eucharistic pyx. Some are of great height, as at Ratisbon (52 ft.), the Lorenzkirche, Nuremberg (64 ft.) and Ulm (90 ft.). Stained glass is often excellent, as in S. Sebaldus, Nuremberg, while the delicate and intricate ironwork of Germany, as seen in the fountains of Nuremberg, is famous throughout the world. The choir stalls at Halberstadt (p. 492 E) and Lübeck (p. 495 H), the screens at Oberwesel (p. 492 B), the pulpit, Nuremberg (p. 495 J), the altar and canopy, Ratisbon (p. 495 L), the stall-end, Erfurt (p. 495 F), the tomb at Marburg (p. 495 K), the holy well at Ratisbon (p. 492 D), and the triptych, Nuremberg (p. 495 C), are representative specimens of the Mediæval art of Germany. S. Sebald's shrine, Nuremberg (A.D. 1508–19) (p. 495 G), by Peter Vischer, exemplifies the craze for over-elaboration which characterised German craftsmen. Here twelve snails support the columns and bronze statues of the twelve Apostles who stand under their intricate fretwork canopies, guarding and enclosing the silver sarcophagus of the Saint.

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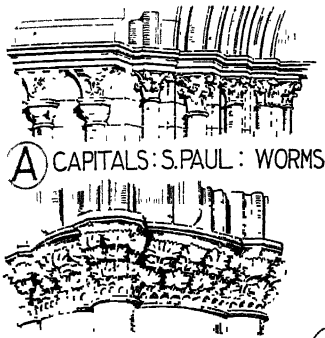
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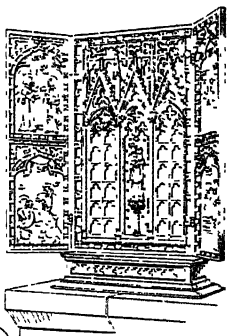
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A CAPITALS: S.PAUL: WORMS

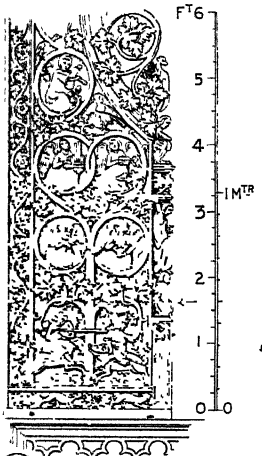
B CAPITAL: MARBURG



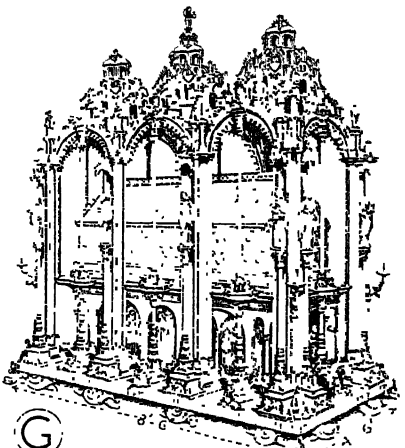
C TRIPTYCH: NUREMBERG



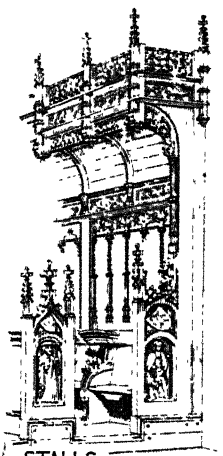
D E CAPITALS W. DOORWAY. FREIBURG



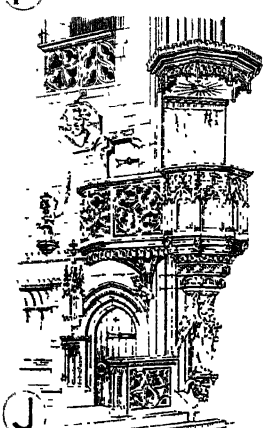
F STALL END: ERFURT



G S. SEBALD'S SHRINE: NUREMBERG



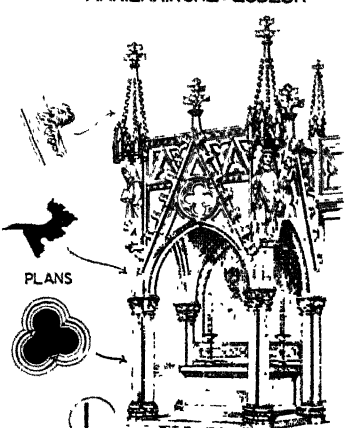
H STALLS MARIENKIRCHE: LUBECK



J PULPIT: NUREMBERG

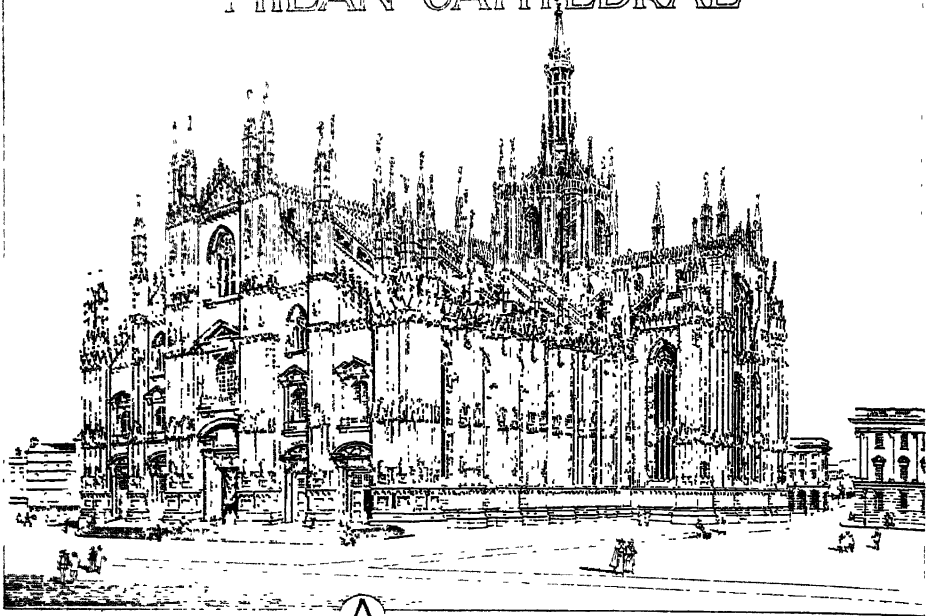


K TOMB OF LANDGRAVE HENRI MARBURG

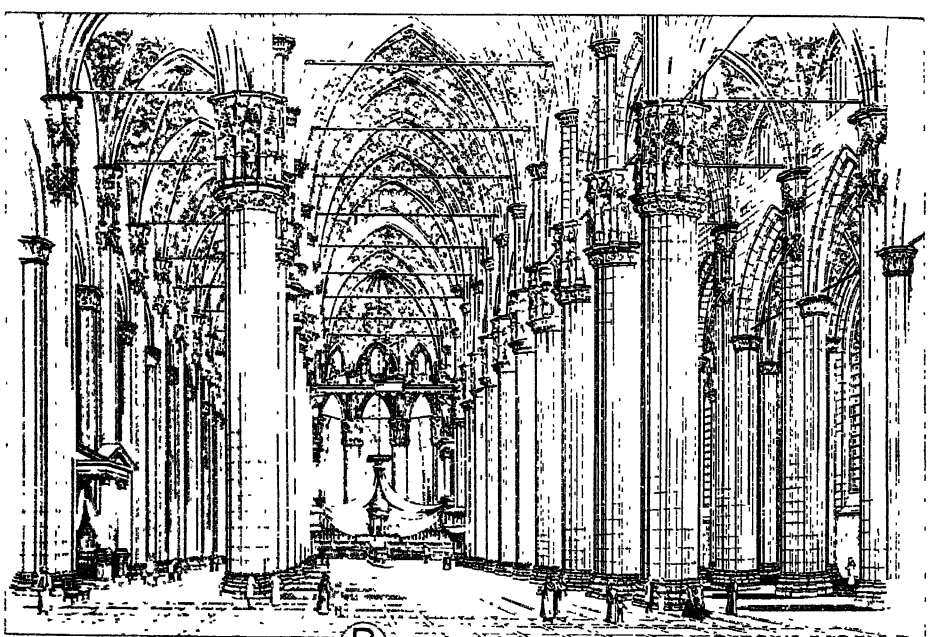


L ALTAR & CANOPY RATISBON

MILAN CATHEDRAL



A EXTERIOR FROM S.W.



B INTERIOR LOOKING E.



ITALY IN THE MEDIÆVAL PERIOD

ITALIAN GOTHIC

(See p. 251 for Italian Romanesque.)

1. INFLUENCES

i. Geographical.—Geographical influence in Italy varied considerably in the north, centre, and south of this long, narrow peninsula. North Italy includes the great Lombard plains and the islands of the Venetian Republic, and was brought into intercourse with Germany through Milan by the Brenner Pass across the natural barrier of the Alps; while the Venetian State on the coast of the Adriatic was, through her overseas trade, in constant contact with Byzantium and the East. Thus seas and mountains, often regarded as nature's barriers, were turned, by an expanding civilisation, into high-roads of art and commerce, especially on that coast "where Venice sat in state, throned on her hundred isles." Central Italy, although dominated by the enduring tradition of Old Rome, yet produced, in the districts to the north and farther from Rome, magnificent Gothic churches of a type peculiar to this district, as at Florence, Siena, and Assisi. South Italy and Sicily, exposed in the past to Greek and Byzantine influences on the east, Roman on the north, and Saracenic on the south, was a veritable battlefield of art, and these conflicting influences produced a peculiar blend of Mediæval architecture, further emphasised by Norman rule.

ii. Geological.—North Italy is especially remarkable for the abundance of clay in the alluvial Lombard plains, from which were made the beautiful red bricks and terra-cotta used for many buildings, both ecclesiastical and

secular, such as the Frari Church, Venice, the Certosa, Pavia, and the Ospedale Maggiore, Milan; while lustrous white and coloured marbles from the mountains to the north were also employed, as at Milan, Genoa, and Verona. Central Italy is characterised by the extensive use of coloured marbles, frequently in zebra stripes or framed panels, which are wrought into the fabric as colour decoration, as at Florence, Siena (p. 513), Orvieto, and Lucca. South Italy and Sicily are so rich in coloured marbles that the term "Sicilian marble" has become a household word, and the architectural decoration of Palermo Cathedral is achieved by the deft mingling of marble in two colours. Thus did the geological formation supply materials for the development of unusually pronounced styles.

iii. **Climatic.**—North Italy has a climate similar to the temperate region of central Europe, and this contributed to the development of those essentially Gothic features, such as large traceried windows, with the consequent necessity for buttresses instead of walls, as seen in Milan Cathedral and to a less extent in the buildings of Padua, Verona, and Venice. In Central and South Italy, the sunny climate and brilliant atmosphere naturally demanded small windows and thick walls to exclude the glare and heat of the sun. The preference, moreover, for opaque wall decoration, whether in mosaic, fresco, or marble, handed down from the ancient Romans through the Romanesque period, counteracted any tendency to supersede opaque walls of stone by transparent walls of glass, and thus there was little chance for the development of window tracery.

iv. **Religious.**—The power of the Pope, as head of the Western Church, waned with Gregory X (A.D. 1271–76), for succeeding Popes were under the influence of the Kings of France, and for seventy years (A.D. 1307—77), a period known as the "Babylonish captivity," they resided at Avignon, losing authority and influence during their absence from Rome, in which city it is significant that there should be only one Gothic church. After the return of Gregory XI to Rome and his death in A.D. 1378, Western Christendom was plunged by rival Popes into the religious turmoil of the "Great Schism of the West" (A.D. 1378–1417), which was only terminated by the Council of Constance and the accession of Martin V. It is not surprising that this period of confusion was unfavourable to the building of churches in Italy. S. Francis of Assisi (A.D. 1182–1226) founded the order of Franciscans or Grey Friars, which fired the religious imagination of the time and revolutionised religious life; for, as Dante says, "he rose like a sun and illumined everything with his rays." The movement he had started gained strength, so that by the eighteenth century there was no less than 9,000 convents of this Order in Europe.

v. **Social.**—Italy had no national unity at this period, but was cut up into principalities and commonwealths, such as the Republics of Venice, Florence, and Genoa, the Duchy of Milan, the Kingdom of Naples, and the Papal States. This absence of national unity is mirrored in the varied architectural treatment in different parts of the peninsula. Political life was full of rivalry and activity, and small wars were of constant occurrence. The erection of the Cathedrals of Siena, Orvieto, Florence, Milan, and Lucca was largely due to the vigorous civic pride of rival cities; while during the struggles (A.D. 1250–1409) between Popes and Emperors and their respective factions, the Guelphs and Ghibellines, both sides had to reckon with the increasing power of the townsmen who erected those numerous town halls which attest the growth of municipal institutions. The unsettled condition

of the times may be gathered not only from the contemporary chronicles of Giovanni Villani, but also from the poet Tasso, who says that the citizens on each holiday blew trumpets and proceeded to sack the neighbouring town. Dante (A.D. 1265–1321) presents a vivid picture of the age in his "Divina Commedia," and this poem, which standardised the Italian language in literature, also coincided with the full development of Italian Gothic architecture.

vi. Historical.—In spite of internal turmoil, Italy led the way in Europe in arts, learning, and commerce, and the revival of learning, known as the Renaissance, took place there nearly a century in advance of northern Europe, and effectually arrested the further evolution of the Gothic style in Italy. The Latin conquest of Constantinople (A.D. 1204) during the fourth crusade, in which the Republic of Venice played such a prominent part, and the subsequent years of the Latin occupation of the city (A.D. 1204–61), were mainly responsible for the immigration, in the thirteenth century, of Græco-Byzantine artists into Italy. These skilled craftsmen, trained in Classical traditions, settled in Genoa, Venice, Pisa, Florence, Siena, and many another town, and gave an impetus to the creative arts which enriched Italy, and then spread their influence throughout Europe. The rise of Venice was marked by the defeat of the Genoese by Doge Dandolo in A.D. 1352, and of the Turkish fleet in A.D. 1416. These victories fired the Venetians with a desire to make the Doge's Palace a fit symbol of their success, and it was completed when Venice reached the zenith of her power and prosperity.

2. ARCHITECTURAL CHARACTER

The general character of Gothic architecture in Europe has already been dealt with (p. 300). The style in Italy dates approximately from A.D. 1200–1450, but the influence of Roman tradition remained so strong that the conspicuous verticality of northern Gothic is generally neutralised in Italy by horizontal cornices and string courses. Churches are marked externally by the following features: flatness of roofs (pp. 502, 513), the screen wall of the west façade which masks the aisle roofs (pp. 496 A, 514 A), the circular window of the west front (p. 505 A, G), an absence of pinnacles and of flying buttresses (p. 513 A), stripes of coloured marbles instead of mouldings, occasional frescoes and mosaics in panels, and small windows without tracery (p. 513 A). The projecting entrance porches with columns, often resting on the backs of lions (p. 516 E), are in striking contrast to the cavernous porches of northern Europe. The sombre effect of this style is described by Tennyson in the lines:

> "Stern and sad (so rare the smiles
> Of sunlight) looked the Lombard piles;
> Porch pillars on the lion resting,
> And sombre, old, colonnaded aisles."

The sculpture and carving (pp. 519, 520), executed in the fine-grained marble of Italy, continued to be as refined as in the Classical period, and the influence of Old Rome is seen in modified Corinthian capitals with their acanthus leaves. The sculpture, although superior in technique to that of northern Europe, is not such an essential part of a style which, as we shall see, never developed, as in France and England, into the highest form of Gothic. The brickwork and plastic terra-cotta of the Lombard plains resulted in a smallness of detail and intricacy of ornament natural

to this material, as in the Frari Church, Venice (p. 505 G), the Certosa, Pavia (p. 514 F), and Chiaravalle (p. 516 D), and many civic buildings. Colour effect and delicate detail were relied on, rather than depth of shadow and boldness of design; thus was the material allowed to give full expression to its own capabilities without forcing it beyond its nature. The variety of influences in South Italy, and more especially in Sicily, produced a type of architecture which owes its beauty to the combination of Greek inspiration, Roman construction, and Byzantine decoration (p. 241).

3. EXAMPLES

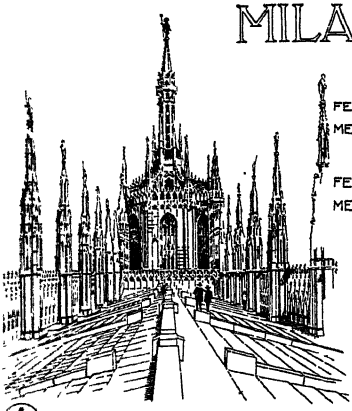
NORTH ITALY

Milan Cathedral (A.D. 1385–1485) (pp. 304 L, 501, 496, 502), erected by the first Duke of Milan, is, with the exception of Seville, the largest Mediæval cathedral, and is somewhat German in character, as many of the fifty architects employed on it were from north of the Alps. The choir and transepts were finished about A.D. 1450, and the nave and aisles were commenced A.D. 1452. In plan (p. 501 C) it consists of a nave, 50 ft. wide between the piers, lofty double aisles and transepts terminated with a circlet of columns in the French manner, but enclosed in a German polygonal apse, while there is an absence of lateral chapels. The interior (pp. 501 D, 496 B) is vast, lofty, and imposing, with fine perspective views, rendered all the more impressive by the dimness and mystery which result from lack of light. It has huge piers, 60 ft. high, surrounded by engaged shafts and surmounted by enormous capitals, containing canopied niches with statues 20 ft. in height, from which spring the nave arches supporting the vault 145 ft. above the ground. It resembles S. Petronio, Bologna, and owing to the excessive height of the aisles there is no triforium and the clear-story is small, in striking contrast with French and English Gothic cathedrals. The exterior is a gleaming mass of white marble with lofty traceried windows, panelled buttresses, flying buttresses, and pinnacles crowned with statues (pp. 496 A, 502), all wrought into a soaring design of lace-like intricacy. The three magnificent traceried windows of the apse, 68 ft. by 28 ft., are the finest of their type in Italy (p. 502 B). The flat-pitched roofs are constructed of massive marble slabs laid on the vaulting (p. 502 C), and over the crossing is a domical vault, 215 ft. above the ground, designed by Brunelleschi (A.D. 1440), finishing in a lantern to which in A.D. 1750 an open-work spire was added, rising 350 ft. above the ground (pp. 501 A, 502 C). The later façade (p. 496 A), which has the wide-spreading gable lines of Romanesque churches, such as S. Michele, Pavia (p. 260 F), remained long unfinished, and was partly built between A.D. 1550 and A.D. 1600, but only completed by Napoleon at the beginning of the nineteenth century. This miracle of Italian Gothic has been apostrophised by Tennyson:

> "O Milan, O, the chanting quires;
> The giant windows' blazon'd fires;
> The height, the space, the gloom, the glory,
> A mount of marble, a hundred spires."

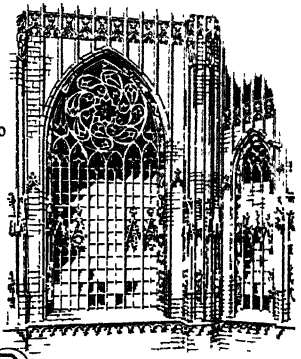
The Certosa, Pavia (A.D. 1396–1481) (p. 514 D, E, F), a famous Carthusian monastery, was commenced by Giovanni Galeazzo Visconti, and forms a splendid memorial of the Milan dynasties. In plan (p. 514 D) it is a Latin cross and similar to many German churches in the triapsal terminations

MILAN CATHEDRAL



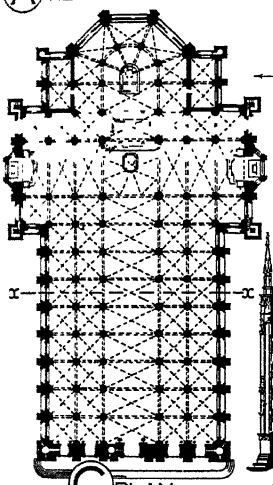
SCALE FOR PLANS
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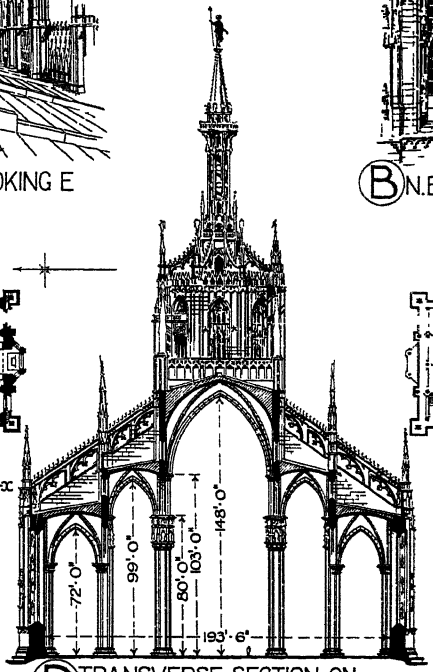
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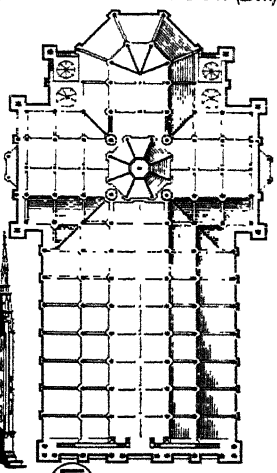


A VIEW OF ROOF LOOKING E

B N.E. APSIDAL WINDOW (EXT.)



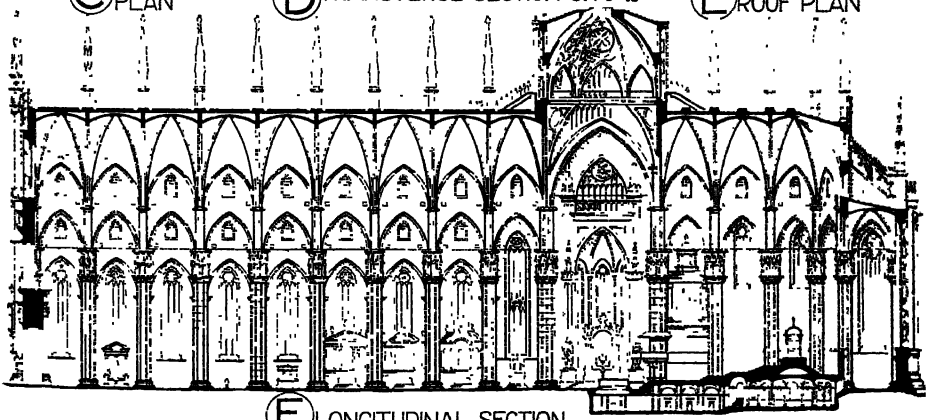




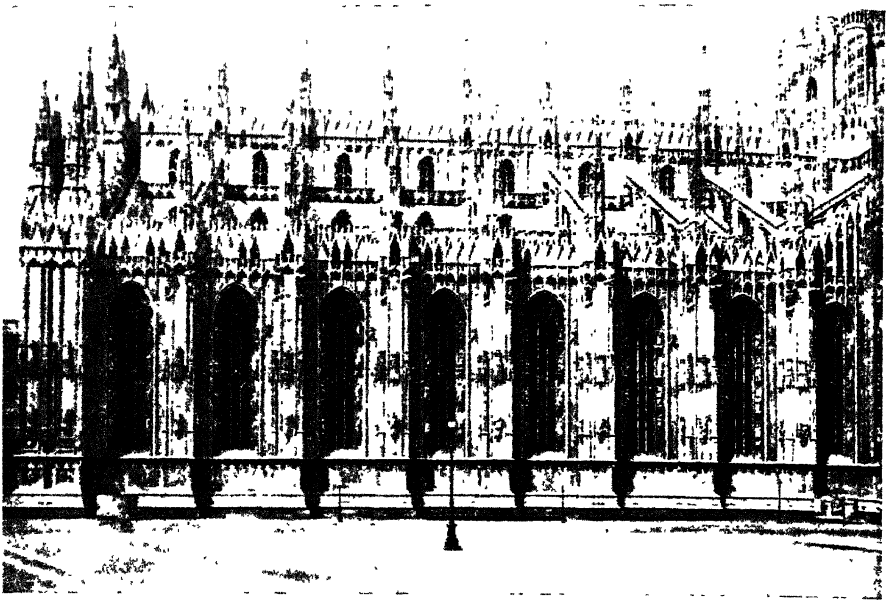
C PLAN

D TRANSVERSE SECTION ON x-x

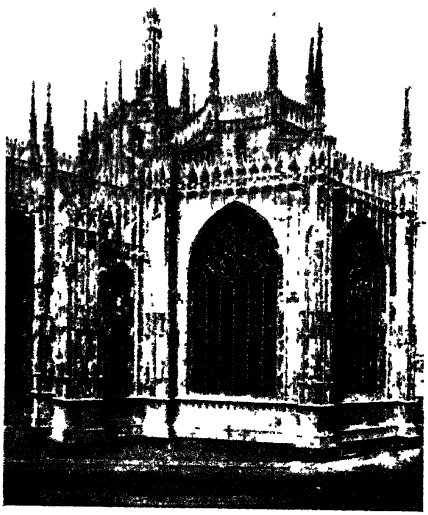
E ROOF PLAN



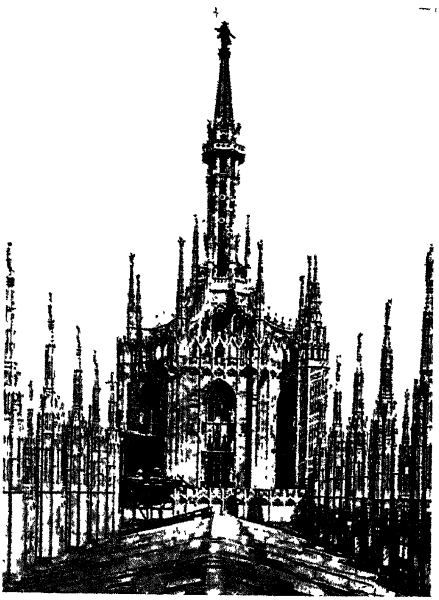
F LONGITUDINAL SECTION



A. Milan Cathedral from S.



B. Milan Cathedral: East End



C. Milan Cathedral: Flèche

to sanctuary and transepts, but the nave is in square, and the aisles in oblong bays, in the Italian manner. On the south are the two cloisters, richly wrought in terra-cotta. The exterior (p. 514 F) is a fascinating and perplexing compound of styles with arcading and terra-cotta ornament; while the monumental façade and storeyed central tower were added in the Renaissance period (pp. 573, 564 A).

S. Antonio, Padua (A.D. 1237–1307), is a remarkable pilgrimage church resembling S. Mark, Venice (p. 235), in general conception. The nave is in square bays covered with domes on pendentives, which are also placed over the crossing, transepts, and choir, beyond which is an apse and chevet with nine radiating chapels similar to contemporary churches in France. The interior also was obviously influenced by the Venetian church, but falls far short of the original, as it lacks the glamour of coloured mosaic decoration. The exterior has an arcade of pointed arches and an upper arcaded gallery, like those in Lombardy, while the domes and minaret-like turrets give it a curious Eastern aspect.

SS. Giovanni e Paolo, Venice (A.D. 1234–1600), is a Dominican church of imposing proportions and of historic importance, as it contains the tombs of the Doges. The Latin cross of the plan is elaborated by pronounced transepts with eastern chapels, and by a polygonal apse to the choir. The interior is essentially Italian in the wide spacing of piers, the square bays of the nave vaulting, and the oblong bays of the aisles, and internal wooden ties take the place of external flying buttresses. The exterior is of beautiful brickwork with pointed traceried windows and moulded cornices, and the clear-story is loftier than usual in Italy, while a dome of later date crowns the crossing.

S. Maria Gloriosa dei Frari, Venice (A.D. 1250–80) (p. 505 E, F, G), is a Franciscan church, designed by Niccolo Pisano, in which there are six eastern transept chapels. The interior (p. 505 F) has lofty stone columns tied together by wooden beams, supporting an arcade of pointed arches and brick vaulting in square bays with massive ribs resting on shafts rising from the capitals of the nave columns. The exterior (p. 505 G) is in fine coloured brickwork, the plain west façade is set off by the sculptured central doorway and circular window above, and by small lateral windows, while along the aisles are pointed windows. The square campanile has vertical panels and a belfry of open arches, and is crowned with an octagonal lantern. The apse (p. 505 E), with its double tiers of pointed tracery windows, flanked by the eastern transept chapels, is the great glory of the church.

S. Anastasia, Verona (A.D. 1261), with its delightful entrance portal in coloured marbles, is a beautiful expression of Italian Gothic, and S. Andrea, Vercelli (A.D. 1219), has a character of its own derived from its two western towers and English type of plan.

S. Petronio, Bologna (A.D. 1390–1437), was designed for this famous university city by Antonio Vincenzi to eclipse the Cathedral at Florence. It was to have consisted of nave, aisles, outer chapels, transepts, chancel, and chevet, and if completed would have been one of the largest churches in Italy, but the eastern part was never built. The interior resembles Milan in having nave and aisles in diminishing heights, and the nave, with little ornamental detail, has widely spaced piers, resembling those of Florence. The chief feature of the entrance façade is the great doorway with its sculptured ornament designed by della Quercia (A.D. 1425). The exterior was never finished, although a competition was held in A.D. 1535 in which Palladio, Vignola, and other Renaissance architects took part.

There are churches at Bologna, Vicenza, Padua, Cremona, and Venice which are examples of the influence of brick and terra-cotta material on architectural treatment.

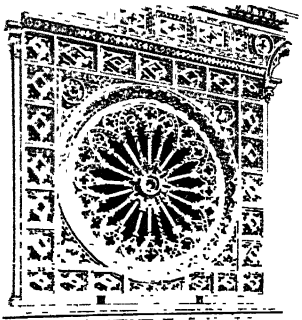
The **Doge's Palace, Venice** (pp. 506, 591), the façades of which date from A.D. 1309–1424, and are from designs by Giov. and Bart. Buon, is the grandest effort in civic architecture of the period, and is material evidence of the proud position of Venice as a great trading community, whose commerce was protected by the supremacy of her navy. The palace had been started at the beginning of the ninth century, and was several times rebuilt, and it forms part of that great scheme of town-planning which was so magnificently carried out through successive centuries (p. 506 D). The façades, with a total length of nearly 500 ft., have open arcades in the two lower storeys, and the third storey was rebuilt after a fire in the sixteenth century, so as to extend over the arcades (p. 506 B). This upper storey is faced with white and rose-coloured marble walls, resembling patterned brickwork, pierced by a few large and ornate windows (p. 505 B) and finished with a lace-like parapet of oriental cresting. The arcade columns (p. 506 E), which originally stood on a stylobate of three steps, now rise from the ground without bases, and the sturdy continuous tracery of the second tier of arcades lends an appearance of strength to the open arches, so heavily loaded by the solid walls above. The capitals of the columns, particularly the angle capital (p. 520 J) eulogised by Ruskin in the " Stones of Venice," are celebrated for the delicate carving in low relief, which was made possible by the use of fine-grained marble. The whole scheme of columned and pointed arcades, with its combination of carved capitals and long horizontal lines of open tracery, is of that unique design which can only be termed Venetian Gothic.

The **Palazzo del Comune, Verona** (A.D. 1206–45), the **Palazzo Pubblico, Piacenza** (A.D. 1281), and the **Palazzo della Mercanzia, Bologna** (A.D. 1290), are similar in having pointed arcades with an upper storey, often with a projecting " ringhiera " or tribune, and there are the familiar forked battlements to the roofs.

The **Ca d'Oro Palace, Venice** (A.D. 1430) (p. 509 C), is another fine design by the architects of the Doge's Palace for one of those palatial homes of merchant princes with which the sea-city abounds. The windows are grouped together in the usual Venetian manner to form a centre for the façade which, however, has remained unfinished. The arcaded entrance of five arches, lighting the deep central hall, is surmounted by an arcade divided into six openings, filled with characteristically Venetian tracery, and flanked by wider arches with projecting balconies, above which is another storey lighter in treatment, and there is a curious roof cresting of Saracenic design. The finished wing of the façade is of solid masonry, which sets off the intricate tracery of the centre.

The **Palazzi Foscari** (fifteenth century), **Contarini-Fasan, Cavalli,** and **Pisani** (fifteenth century) (p. 509 B) are famous Gothic palaces on the Grand Canal. They display the concentration of traceried openings in the centre to light the hall, and have solid unbroken wings, which produce a reposeful reflection in the water below.

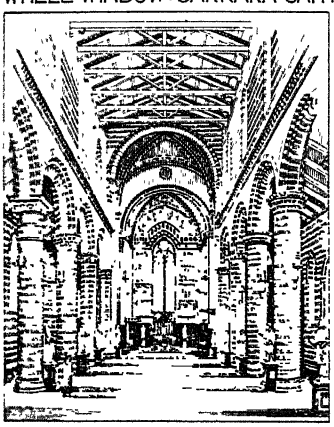
The **Ponte del Castello Vecchio, Verona** (A.D. 1335), is one of many bridges which were of such importance as means of intercommunication, that they were even considered sacred. It is a fortified bridge across the Adige, with a tower on either bank, and has segmental arches, a low octagonal tower at every pier, and forked Ghibelline battlements along its whole length.



A WHEEL WINDOW: CARRARA CATH.



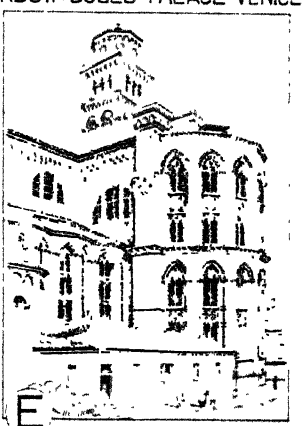
B WINDOW: DOGES' PALACE VENICE



C ORVIETO CATHEDRAL INTERIOR LOOKING E



D CAMPANILE PAL DEL COMUNE: VERONA

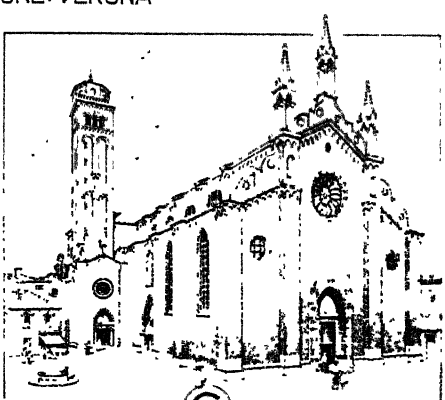


E S. M GLORIOSA DEI FRARI VENICE: THE APSE



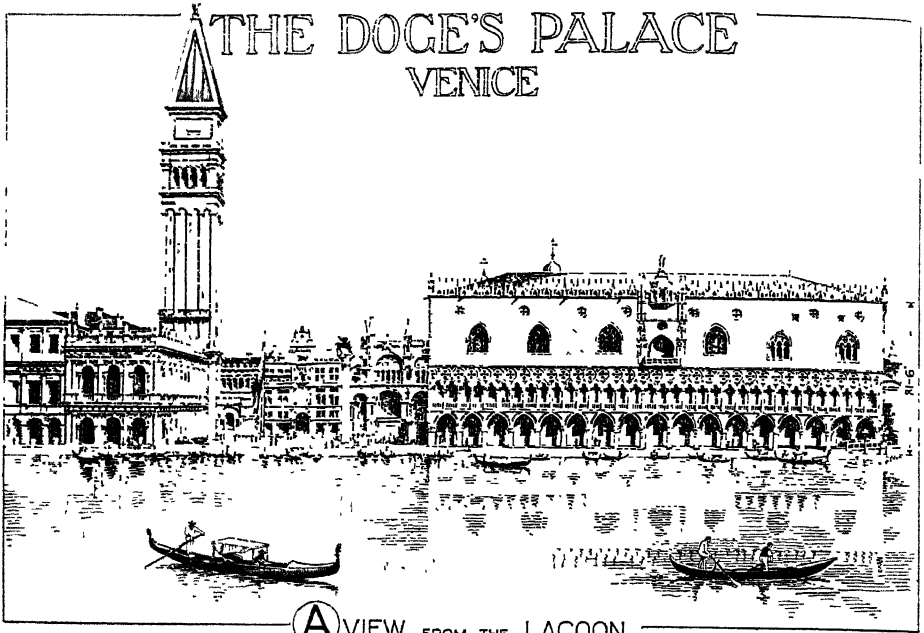
F INTERIOR LOOKING E.

S. M. GLORIOSA DEI FRARI: VENICE

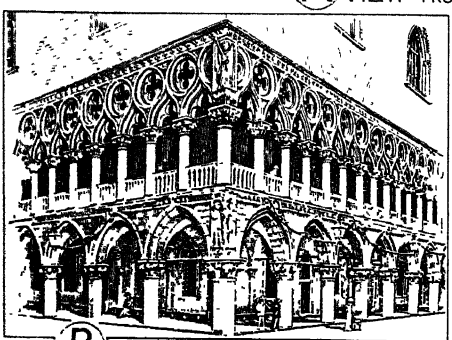


G EXTERIOR FROM W.

THE DOGE'S PALACE
VENICE



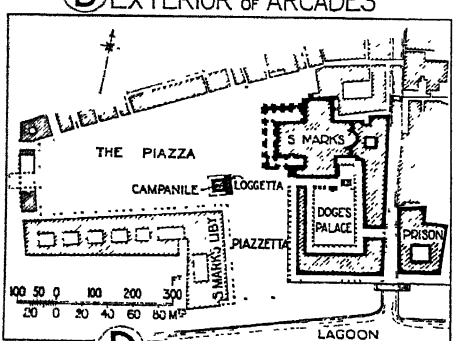
A VIEW FROM THE LAGOON



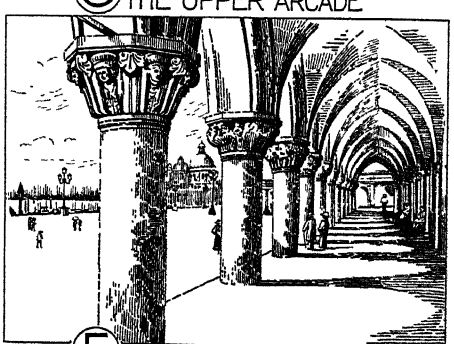
B EXTERIOR OF ARCADES



C THE UPPER ARCADE



D PLAN OF PIAZZA



E THE LOWER ARCADE

The **Torre del Comune, Verona** (A.D. 1172) (p. 505 D), is one of the communal towers which sprang up as a result of Mediæval civic life; for they served as bell towers to summon the citizens and as watch towers against fire and enemies. The square shaft of striped stone and brickwork has a belfry of three lights on each face; the crowning octagonal turret, in two stages, rises to a height of 272 ft., and was added in A.D. 1372, when the tower came into the possession of the citizens.

The **Toraccio, Cremona** (A.D. 1261), the highest in Italy, and the celebrated **Campanile of S. Mark, Venice** (p. 506 A), rebuilt since its collapse in A.D. 1905, add to the world-fame of Italian towers.

The **Ospedale Maggiore, Milan** (A.D. 1457) (p. 563 F, G), is a late Gothic structure, added to in the Renaissance period (p. 572). It is built of brick and terra-cotta, the use of which has resulted in delicacy of modelling in the broad frieze between the storeys and in the ornamental bands round the windows.

CENTRAL ITALY

Florence Cathedral (A.D. 1296–1462) (pp. 510, 513), also known as S. Maria del Fiore, was designed by Arnolfo di Cambio, and is essentially Italian in character without the vertical features of northern Gothic. It was built around the old church of S. Reparata when, in A.D. 1296, the city council decided to erect a new Cathedral worthy of the prosperity of the citizens. It forms the centre of the group which emphasises the importance of Florence and the ambition of her sons during the Middle Ages. On Arnolfo's death in A.D. 1301 the building was stopped till A.D. 1334, when Giotto was appointed master of the works, and he was followed by Andrea Pisano and Talenti, who in A.D. 1350 enlarged Arnolfo's plan, while in A.D. 1366 a commission of architects laid out the choir and transepts. The three apses were completed in A.D. 1421, the dome was added by Brunelleschi (A.D. 1420–37) as the result of a competition (p. 571), and the lantern was placed over it in A.D. 1462. The plan (p. 510 F) is a peculiar type of Latin cross, and remarkable for the large central nave, 270 ft. long, and wide spacing of nave arcades, for there are only four square bays of 60 ft. This vast nave forms an impressive though sombre approach to the majestic octagon (p. 510 G), 138 ft. 6 ins. in diameter, off which are the three immense apses with fifteen radiating chapels. The piers have attached pilasters and unmoulded pointed arches; there is no triforium, but a small clear-story of circular windows below the vaulted roof. The exterior (pp. 510 A, 513 A) is notable for its coloured marble panelling, small traceried windows, absence of buttresses and pinnacles, and for the horizontal lines of the design, the unique semi-octagonal apses, and the pointed dome. The marble facing of the west façade, which was begun in the thirteenth century (p. 510 E), remained incomplete till the whole front was recommenced in A.D. 1875 (p. 510 A), with its panels of coloured marble, sculptures, and mosaics, but it was not completed till A.D. 1887.

The **Campanile, Florence** (A.D. 1334–87) (pp. 510 A, 513 A), which stands at the side of the Cathedral, is 45 ft. square and 275 ft. high, and was designed by Giotto on traditional Italian lines. It rises sheer from the pavement without supporting buttresses, and all its four sides are panelled in coloured marble and embellished with sculptured friezes and marble inlay. It is divided into four principal stages, of which the topmost is the belfry, crowned by an arched corbel table, instead of the intended spire.

The **Baptistery, Florence** (A.D. 1290) (p. 513 A), although dating from the

Romanesque period, was altered by Arnolfo di Cambio and, standing to the west of the Cathedral, forms part of this world-famous group. The octagon is 90 ft. in diameter, covered with an internal dome, 103 ft. high, probably modelled on that of the Pantheon. The façades are in three stages of black and white marble, crowned with a low roof and lantern. The Baptistery is noted for the marvellous workmanship of its famous bronze doors, which were added in the fourteenth and fifteenth centuries by Andrea Pisano and Lorenzo Ghiberti (p. 566).

Siena Cathedral (A.D. 1245–1380) (pp. 513 B, 514 A, B, C), one of the most stupendous undertakings since the building of Pisa Cathedral, was largely the outcome of civic pride, and all the artists of Siena contributed their works to its building and adornment. The plan, which is only a part of the intended scheme, is cruciform, with an unusual irregular hexagon at the crossing, 58 ft. in diameter (p. 514 C), covered by a dome and lantern; while the sanctuary, owing to the slope of the ground, is built over the Baptistery of S. Giovanni, which thus forms a crypt, and is entered from the lower level. The interior is striking in its combination of unusual features (pp. 513 B, 514 B). The zebra marble striping on wall and pier, the squinch-arches of the strange hexagon, and the incised marble floor, by the famous pavement-artists of Siena, form suitable surroundings for the famous sculptured pulpit by Niccolo Pisano. The building stands on a stepped platform (p. 514 A) which gives dignity to the composition, and it has an elaborately sculptured western façade (A.D. 1370–80) which is merely a frontispiece faced with marble in black and white stripes and with three highly ornate recessed doorways. The shaft-like campanile, also in striped marble, has six stages of windows which increase in size, and, rising from the south transept, it forms the central feature of the group.

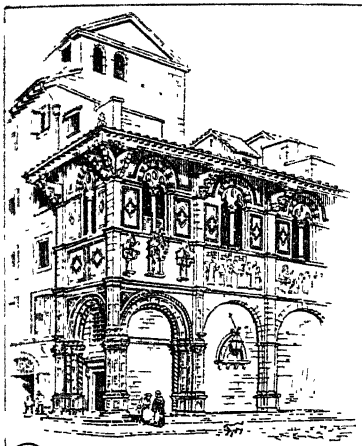
The **Campo Santo, Pisa** (A.D. 1278–83) (pp. 257 A, 258 B), by Giovanni Pisano, consists of an open rectangle surrounded by a cloister with round-arched openings, filled with beautiful open tracery in A.D. 1463.

S. Maria della Spina, Pisa (A.D. 1323), by Giovanni Pisano, is a miniature church on the banks of the Arno with shrine-like façade of crocketed gables and pinnacled canopies.

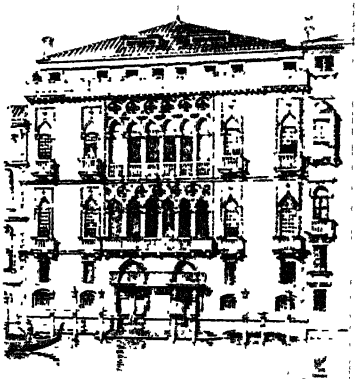
Orvieto Cathedral (A.D. 1290–1310), another building by Arnolfo di Cambio, stands on an eminence in this isolated hill-city. Its plan is a Latin cross with nave, aisles, and projecting semicircular chapels. The interior (p. 505 C) shows basilican influence, with its lofty cylindrical pillars in black and white marble, which support semicircular arches surmounted by a striped clear-story and pointed windows, all crowned by a timber roof of basilican type. The exterior also is of striped marble carried round the aisle chapels, the windows of which are partly filled with alabaster. The façade (A.D. 1310) resembles Siena with its three porches, gables, and rose window, and is a glowing mass of symbolism carried out in coloured mosaic, carving, and sculpture of great beauty.

S. Maria Novella, Florence (A.D. 1278–1350) (p. 550), was designed by two Dominican monks as a Latin cross of great size with transepts, chapels, and beautiful cloisters. The nave has no triforium, but a low clear-story with circular windows and a ribbed vault. The original design of the unfinished exterior is indicated by some blind arcading on the entrance façade, which was completed by Alberti in the Renaissance period (p. 572).

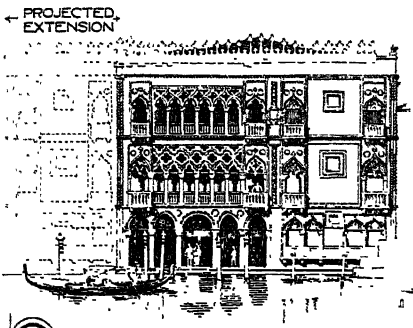
S. Croce, Florence (A.D. 1294–1442), one of the largest churches in Europe, was designed by Arnolfo di Cambio, and contains numerous monuments to



A THE BIGALLO: FLORENCE

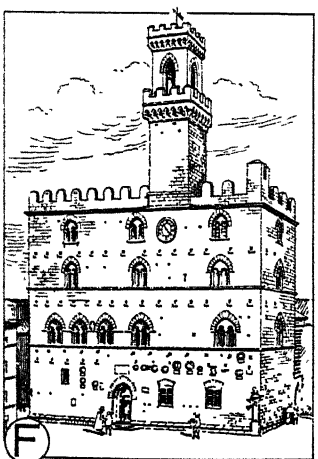


B PALAZZO PISANI: VENICE

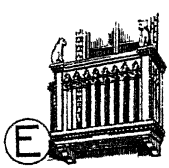


C PALAZZO CA D'ORO: VENICE

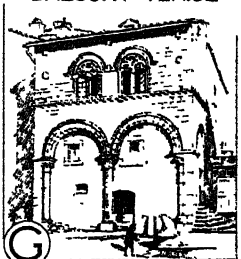
D PALAZZO PUBBLICO: SIENA



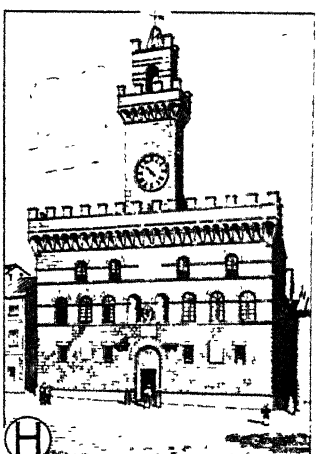
F PAL. DEI PRIORI: VOLTERRA



E BALCONY: VENICE

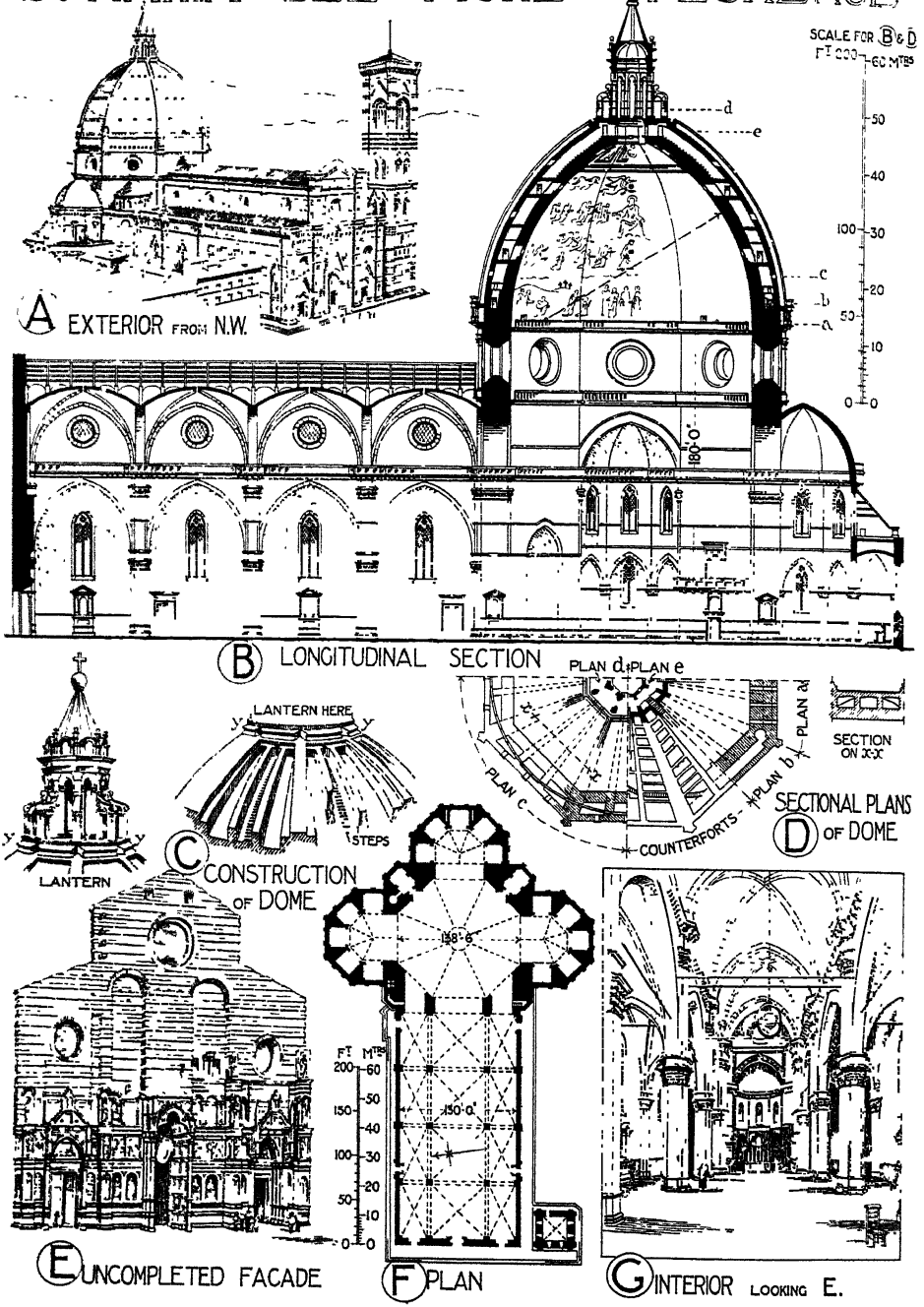


G MEDIÆVAL Hº: VITERBO



H PAL. PUBBLICO: MONTEPULCIANO

S. MARIA DEL FIORE: †FLORENCE



celebrated Italians ; hence it is called the Westminster Abbey of Florence. It is a Gothic version of a basilican church, with widely spaced columns and open timber roof. The western façade of later date is similar in character to that of Siena Cathedral.

Or San Michele, Florence (A.D. 1336–1404), was designed by Taddeo Gaddi, and was originally called " S. Michele in Orto," from its garden site. It has a rectangular ground storey now used as a church, which has fine three-light windows with slender columns and elaborate tracery enclosed in semicircular arches. Externally, between the windows, are niches filled with statues by celebrated sculptors, such as Donatello and Ghiberti, as offerings from the twelve great trade guilds of Florence between A.D. 1428 and 1550. In the interior is a beautiful tabernacle and High Altar by Andrea Orcagna (A.D. 1359). There are two upper storeys over the church which have two-light windows and are now used for State archives.

S. Francesco, Assisi (A.D. 1228–53) (p. 521), the great pilgrimage church on the crest of the hill above the historic plain, owes much of its imposing character to its lofty position, while the hill-slope facilitated the erection of an upper and lower church. The vast monastic buildings on their massive masonry substructures testify to the magnetic influence of the great Italian saint and founder. Both churches are vaulted, and the dim mystery of the aisleless interiors, terminated by a polygonal apse, gives a sense of solemnity to the brilliant frescoes of Cimabue and Giotto, representing scenes from the life of S. Francis and incidents in the history of the Franciscan Order. These frescoes form a complete and consistent scheme of decoration, thoroughly in harmony with Italian tradition ; they make one of the most glowing church interiors in all Italy, and are a fitting memorial-shrine of one who trod the path of self-abnegation. The doorways of both upper and lower church, the circular window of the nave, and the turret-shaped buttresses, with low flying arches, are the main features of the exterior. A sturdy campanile, which retains the Lombard Romanesque character, crowns this famous group.

S. Maria sopra Minerva, Rome (A.D. 1280), is the only Gothic church in Rome, and this is itself an evidence of the impregnable fortress which the citadel of Classic Rome presented to the advance of Gothic art ; besides which the city had been well supplied with churches during the Early Christian period.

The **Palazzo del Podesta, Florence** (A.D. 1255), the **Palazzo Vecchio, Florence** (A.D. 1298), the **Palazzo Pubblico, Siena** (A.D. 1289) (p. 509 D), the **Palazzo del Municipio, Perugia** (A.D. 1281), and the **Palazzo Pubblico, Montepulciano** (p. 509 H), represent the municipal life and enterprise of these Mediæval cities, and still stand, grave and severe, amidst the bustle of modern life, with their lofty watch towers and fortified façades, often finished with machicolations and battlements.

The **Palazzo dei Priori, Volterra** (A.D. 1208–57) (p. 509 F), is in four storeys with two-light windows, now irregularly placed. It is crowned with heavy battlements and the square tower rising above the front wall is capped with a belfry.

The **Broletto, Monza,** dating from earlier times, possesses, like many another, a *ringhiera* or balcony (p. 267 D) on a level with the floor of the great hall, from which the magistrates were wont to address the citizens.

The **Castle, Volterra** (A.D. 1343), high on its rocky site, is a typical Mediæval stronghold with massive walls, small windows, round towers, and machicolations.

The **Bigallo, Florence** (A.D. 1352–58) (p. 509 A), is a delicately arcaded little loggia, designed to shelter foundlings who were there displayed by the Capitane of S. Maria to appeal to the charity of the public.

The **Loggia dei Lanzi, Florence** (A.D. 1376), with its three bold semi-circular arches and compound piers, forms a part only of a great town-planning scheme which would have made the piazza the most magnificent arcaded square in Italy.

The **Loggia dei Mercanti, Bologna** (A.D. 1290) (p. 516 G), is an ornate commercial building, with lower storey of pointed arches and upper storey of two-light traceried windows, between which is the *ringhiera* with its Gothic canopy (A.D. 1439), while on the parapet are the forked battlements of the Ghibellines.

The **Mediæval House, Viterbo** (p. 509 G), with its arcaded ground storey and traceried windows, is interesting among many such houses as evidence of a phase of civilisation which has passed away.

S. Gimignano on its hill-top still retains thirteen towers built by rival local families—adherents of the Ghibellines and Guelphs—which vividly suggest the condition of the times when, as we are told, the municipality had to make building regulations to limit the height of the towers of these fortress-houses, which still give a strangely Mediæval aspect to this picturesque hill-city.

The **Ponte Vecchio, Florence** (A.D. 1345), has a quaint character all its own, with its three segmental arches springing boldly from massive piers to withstand the waters of the Arno when swollen with melting Alpine snows, while along both sides of its roadway are the miniature shops of the goldsmiths' quarter.

SOUTHERN ITALY AND SICILY

Messina Cathedral (A.D. 1098), frequently altered after damage by fire and earthquakes until it was practically destroyed by the earthquake of A.D. 1909, was basilican in plan and the nave had an elaborate timber roof in Saracenic honeycomb work.

Palermo Cathedral (A.D. 1170–85) (p. 515 A), on the site of an earlier Saracenic mosque, is also basilican in plan and was commenced by King William the Good of Sicily. The open porch (A.D. 1480), with slender columns supporting stilted pointed arches of Saracenic type is reminiscent of the Alhambra, Granada ; while the roof battlements recall those of the Doge's Palace. At the west end the Cathedral, which is Saracenic in character, is connected across the street by two pointed arches to the tower of the Archbishop's Palace. Two slender minaret towers on either side resemble those at the east end, and in its vigour of skyline the whole group suggests Northern Gothic. The external decoration is in stone of two colours, and the apses are particularly fine in treatment with polychrome interlaced blind arcading.

The **Castello Nuovo, Naples** (A.D. 1279–83), built by Charles I of Anjou, is a lofty, rectangular structure, with three machicolated round towers and curtain walls, now pierced with Renaissance windows.

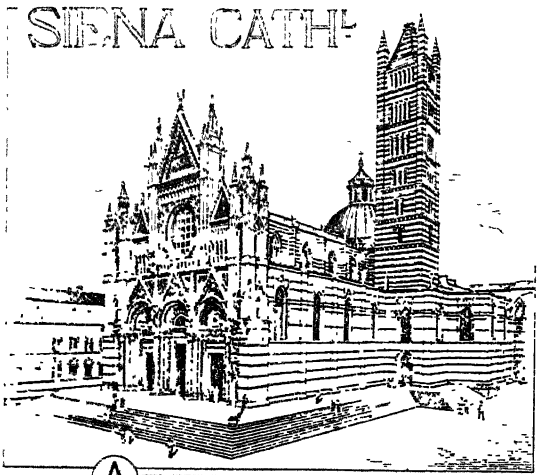
The **Palazzo Stefano, Taormina** (A.D. 1396) (p. 515 B)—one of many palaces in that ancient precipice-city which have pointed two-light windows with trefoil heads and crowning machicolated cornices—and the **Archbishop's Palace, Palermo,** designed with flamboyant tracery windows (p. 515 C)—now mostly blocked up to keep out the southern sun—are typical secular buildings of the Mediæval period.



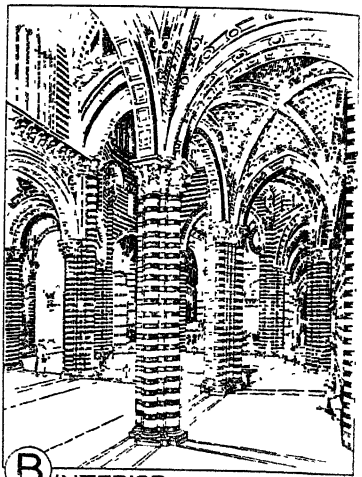
A. Florence Cathedral from S.E.



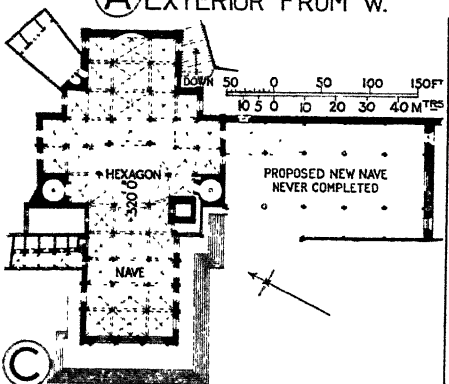
B. Siena Cathedral : Interior



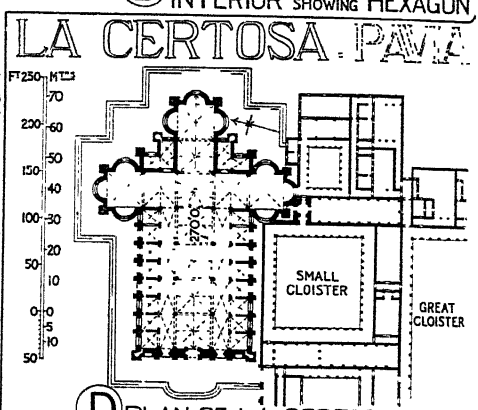
A EXTERIOR FROM W.



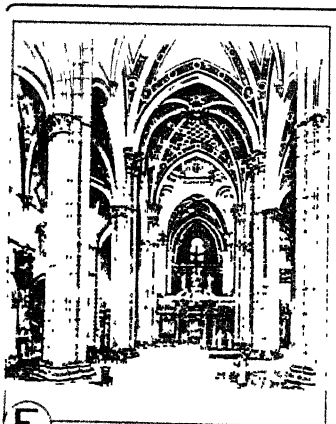
B INTERIOR SHOWING HEXAGON



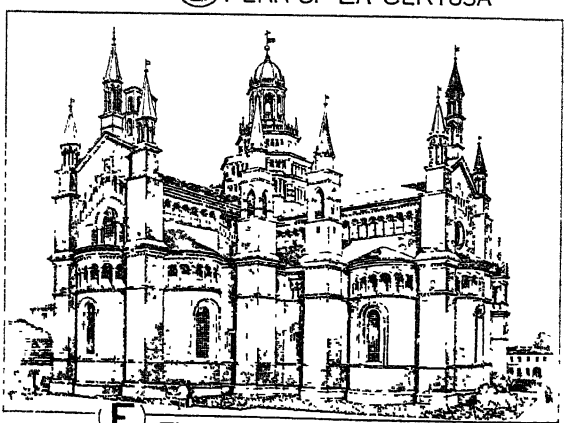
C PLAN OF SIENA CATHEDRAL



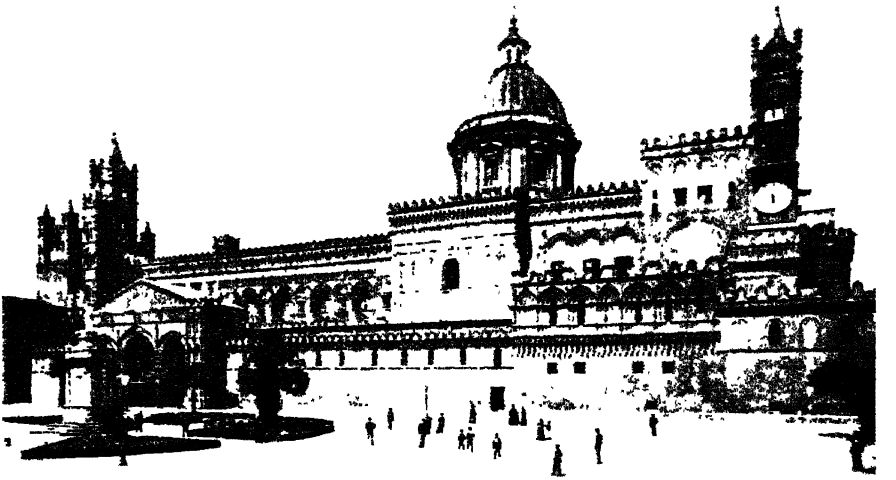
D PLAN OF LA CERTOSA



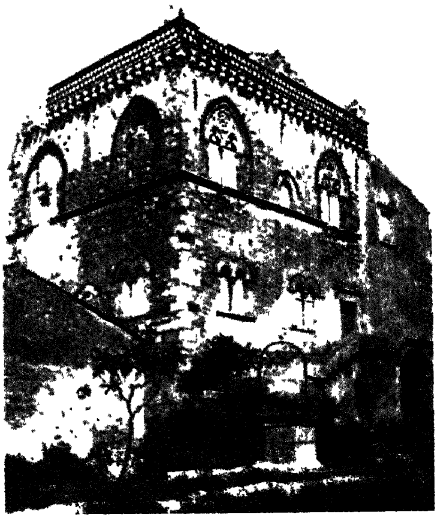
E INTERIOR LOOKING E.



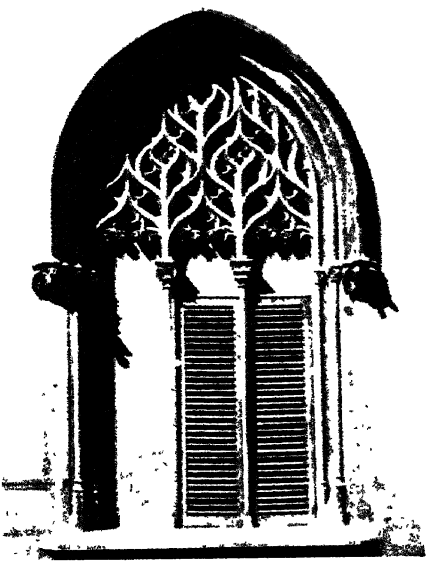
F EXTERIOR FROM N.



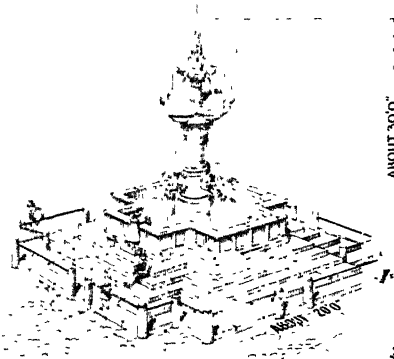
A. Palermo Cathedral from S.



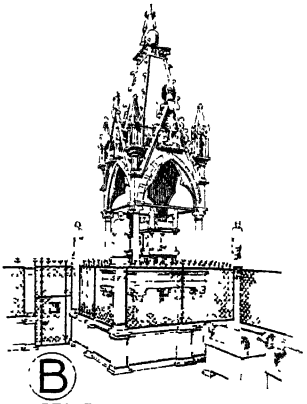
B. Palazzo Duca S. Stefano, Taormina



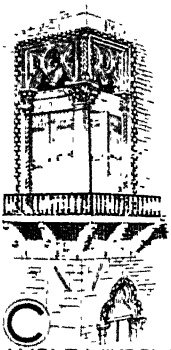
C. Window in the Palazzo Arcivescovile, Palermo



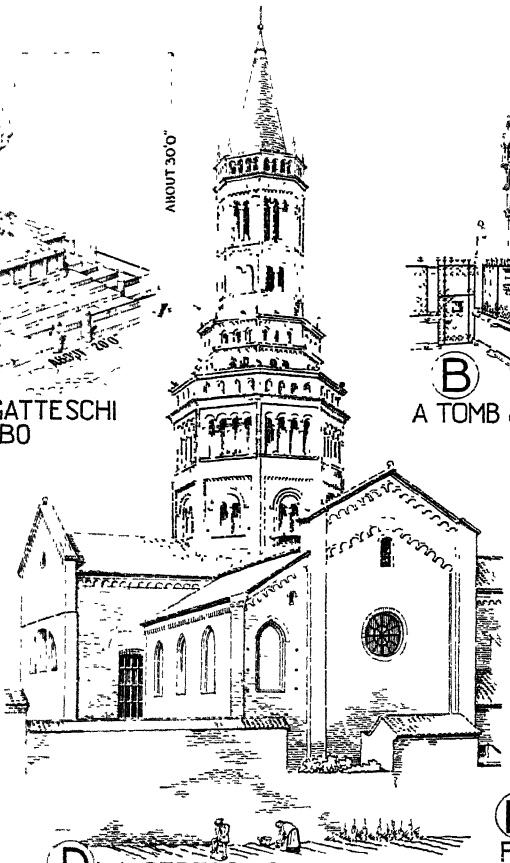
A THE FONTÈ GATTESCHI
VITERBO



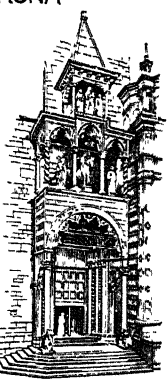
B A TOMB OF THE SCALIGERS
VERONA



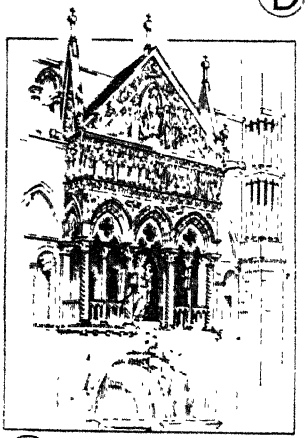
C ANGLE WINDOW
VENICE



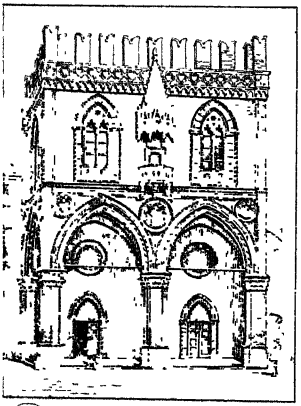
D LA CERTOSA: CHIARAVALLE



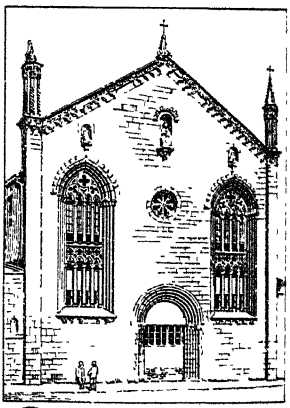
E PORCH: S.M.MAGGIORE
BERGAMO



F PORCH: THE DUOMO
FERRARA



G LOGGIA DEI MERCANTI
BOLOGNA



H FACADE: S. AGOSTINO
BERGAMO

4. COMPARATIVE ANALYSIS

A. **Plans.**—The desire for a great central space, as at Florence (p. 510 F) and Siena (p. 514 C), shows the influence of Roman models. Nave arcades are widely spaced, the triforium usually omitted, as at Florence (p. 510 G) and Milan (p. 501 D), and the clear-story reduced to vault spandrels pierced by small and generally circular windows (p. 501 F, 510 B). These lofty arcades practically include the aisles and nave in one composition and give the effect of a single hall (p. 496 B). Nave vaulting is frequently set out in square compartments, as in Florence Cathedral (p. 510 F) and the Certosa, Pavia (p. 514 D); while the aisles have oblong compartments (p. 510 F), thus reversing the northern Gothic practice. Towers, usually isolated, are square shafts without buttresses, continuing the Romanesque tradition, but often have beautiful surface ornament, and they, unlike northern examples, develop no spire growth. The best known are at Florence (p. 513 A), Siena (p. 514 A), Lucca, Verona (p. 505 D), Mantua, and Pistoia. The dome was the most imposing external feature, as at Siena (p. 514 A) and Florence (p. 513 A). The central towers in diminishing stages, as at Chiaravalle (p. 516 D), Pavia, and Milan (pp. 496 A, 502 C), are an advance on the Romanesque lanterns at the crossing and may be compared with English examples, especially the octagon at Ely.

B. **Walls.**—The absence of large windows obviated the necessity for projecting buttresses, as the high walls were comparatively solid throughout their length and were thus able to withstand the vault pressure (p. 513 A). Owing to the absence of vertical features with their shadows, flatness is the predominant characteristic of the walls. Façades are treated independently as decorative compositions, and often have no relation to the structure or roofs behind (p. 514 A), while the marble facing was often left unfinished on the score of expense. Marble was used in bands of two colours at Siena (pp. 513 B, 514 A, B) and Orvieto (p. 505 C), and in decorative panels at Florence (p. 513 A), while some façades of extraordinary richness have three high gables (p. 514 A). This surface treatment was probably borrowed from the Saracens and may be contrasted with northern methods, in which the effect is obtained by deeply moulded string courses, projecting buttresses, and soaring pinnacles.

C. **Openings.**—Arcades, as a protection from the sun, were as necessary as in previous periods and generally consisted of slender columns with Corinthianesque capitals, supporting slightly pointed arches held together by iron ties (pp. 506, 509). Nave arcades have, for the most part, widely spaced and lofty columns (pp. 505 C, F, 514 E) or piers faced with pilasters, as at Florence (p. 510 G). Doorways, although sometimes richly moulded and flanked by half-columns in Orders, have not the cavernous character of French Gothic; while the projecting portico of the Romanesque period was often retained in North Italy, as at Parma, Verona, and the three-storeyed portico at Bergamo (p. 516 E). Windows, which are comparatively small, except occasionally in the north (p. 516 H), have semicircular or pointed arches and shafts with square capitals of Corinthian type (p. 515 C), instead of moulded mullions as in northern Gothic. These slender shafts are sometimes twisted and even inlaid with glass mosaic known as "cosmato" work from craftsmen of that name; while the capitals are richly sculptured (pp. 505 B, 516 F). The tracery of Venetian windows is a special form of geometric combinations (p. 506 B), finishing in a horizontal line suitable to flat ceilings of

secular buildings, and is often of great beauty (pp. 509 B, C, 516 C). Some of the circular traceried windows are of extreme delicacy as at Carrara (p. 505 A). A moulded keystone is often provided to pointed arches, which are also sometimes enclosed in a square frame; but circular-headed windows continued in use throughout the Gothic period. At Venice many houses overlooking the canals have beautiful window balconies (p. 509 E).

D. **Roofs.**—The roofs are of low pitch and of little importance in the design, being scarcely visible from below (pp. 505 G, 509, 513 A, 521). The steep gables of the elaborate façades were sometimes adopted from northern Europe and hide the flat Italian roofs (p. 514 A). Iron or timber tie-beams were often used, in the place of buttresses, to prevent the spread of the roof timbers or vaults (pp. 505 F, 510 G), and it has been computed that there are only seven buildings in Italy with flying buttresses.

E. **Columns.**—The piers of arcades in churches are at times surprisingly clumsy, four pilasters combined, back to back, being a common plan (p. 510 B). Columns with capitals and bases, recalling Roman work, were also used (p. 505 C, F), but the gradual evolution of pier design, so noticeable in England, where it was due to the exigencies of vaulting, is not observable. The lofty circular piers in Milan Cathedral, with moulded shafts and high tabernacle capitals, produced the effect of a columnar interior (p. 496 B).

F. **Mouldings.**—Mouldings are subordinated to surface decoration, and the most interesting are those in the brickwork of North Italy. They are little changed from the Roman style and the section of arch moulding is often identical with the jamb, although there may also be capitals at the impost (p. 519 A).

G. **Ornament** (pp. 519, 520).—Opaque wall decoration in fresco and mosiac was preferred to translucent stained glass. The Arena Chapel, Padua, is a Mediæval precursor by Giotto of the later Renaissance paintings of Raphael and Michelangelo in the Sistine Chapel, and, like many other buildings, is a mere shell for internal frescoes which take the place of architectural features. Carving and sculpture (p. 519) inherited the refinement of Classical times and contrast markedly with the grotesque element of northern art. The carving, painting, and mosaics of sumptuous altars, canopy tombs (p. 520 B, C, G), pavements, choir stalls (p. 520 D, F), and aumbries (p. 519 H), in addition to the coloured marble façades, well display the decorative side of the style. The Tomb of the Scaligers, Verona (A.D. 1329–80) (p. 516 B), is an instance of this rich decoration, and many churches also at Rome have elaborate mosaic work of "cosmato" design on twisted column and arch. No country in Europe is as rich as Italy in architectural accessories, including pulpits as at Pisa and Assisi (p. 519 E, K), reredoses as at Florence and Milan (p. 520 H, K), carved screens as at the Frari Church, Venice (p. 505 F), cantoria as at Monza (p. 519 J), tombs as at Padua (p. 519 C), shrines as at S. Eustorgio, Milan (p. 520 A), fountains as at Viterbo (p. 516 A), candelabra as at Florence (p. 520 E), and reliquaries as at S. Maria Novella, Florence (p. 519 B).

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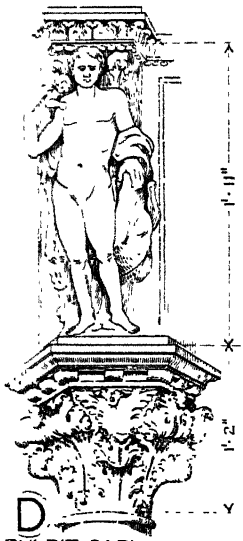
A DOORHEAD: ORATORIO DEGLI AVVOCATI: VITERBO



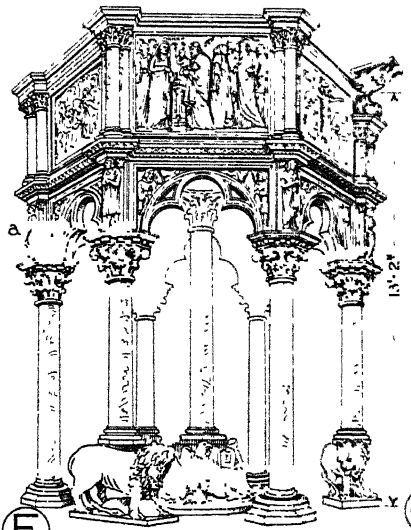
B RELIQUARY S.M. NOVELLA: FLORENCE



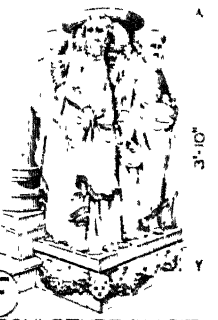
C TOMB: S ANTONIO: PADUA



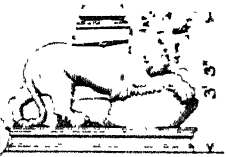
D PULPIT CAPL AT a.



E PULPIT: BAPTISTERY: PISA

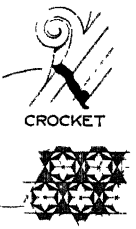


F SCULPTURE. PULPIT CATHEDRAL: PISA

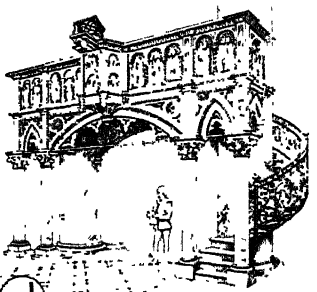


G BASE: PULPIT: CATH= PISA

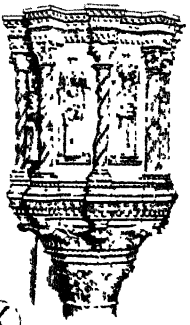




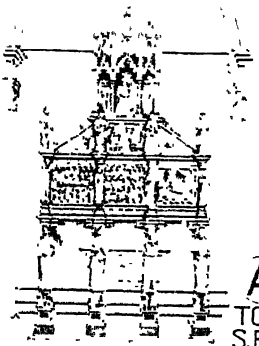
H AUMBRY: S. CLEMENTE: ROME



J CANTORIA: MONZA CATHEDRAL

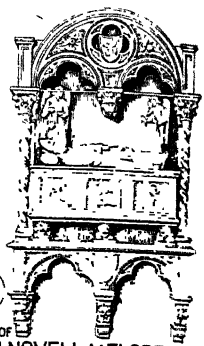


K PULPIT: S. FRANCESCO: ASSISI

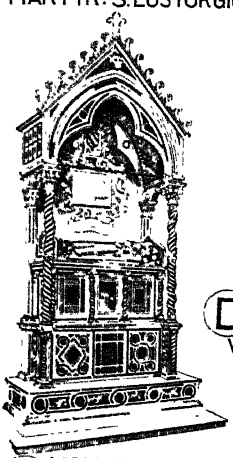


A TOMB OF S. PETER MARTYR: S. EUSTORGIO: MILAN





B MONUMENT OF ALIOTTI: S.M.NOVELLA: FLORENCE



C MONMT TO HADRIAN V. S. FRANCESCO: VITERBO

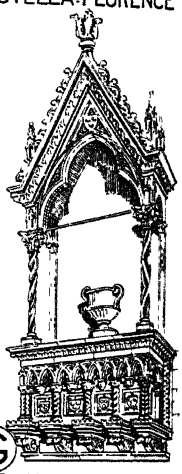


D WOOD BENCH-END S. CORATO MOLFETTA

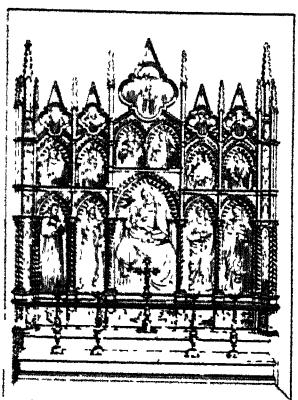
E MARBLE CANDELABRUM BAPTISTERY: FLORENCE



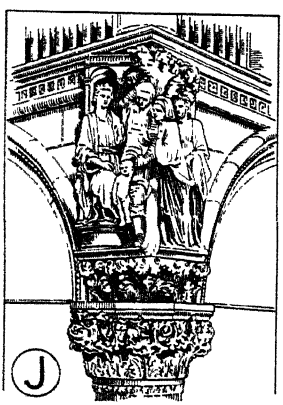
F WOOD BENCH-END S. CORATO MOLFETTA



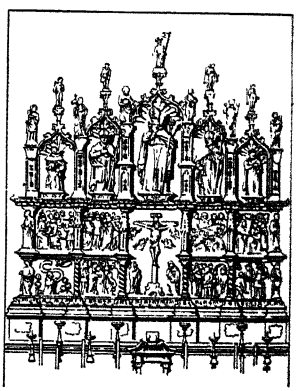
G MONMT TO NICCOLO SPECCHI S. FRANCESCO: ASSISI



H PAINTED REREDOS S. CROCE: FLORENCE

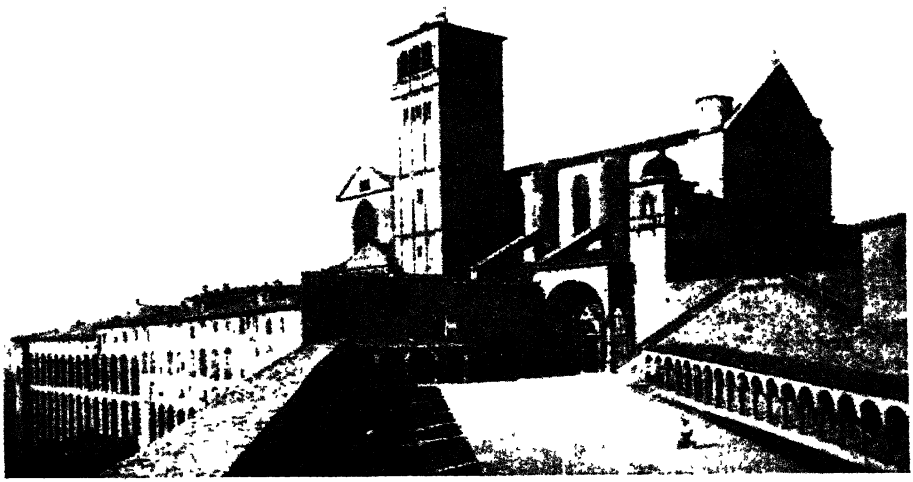


J CAP. JUDGMENT of SOLOMON DUCAL PALACE: VENICE

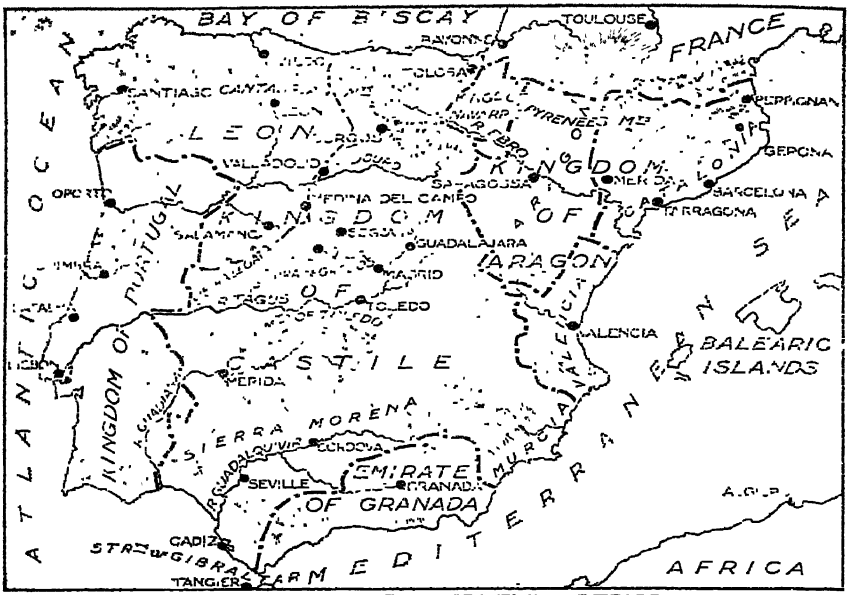


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S. Francesco, Assisi, from Lower Terrace on E.



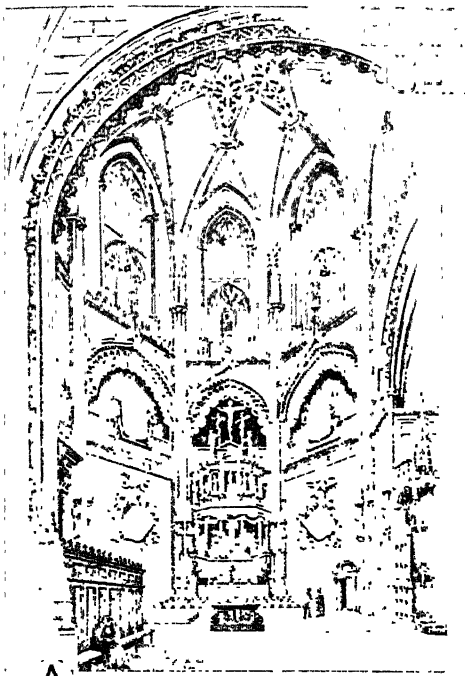
SPAIN IN THE MEDIÆVAL PERIOD

SPANISH GOTHIC

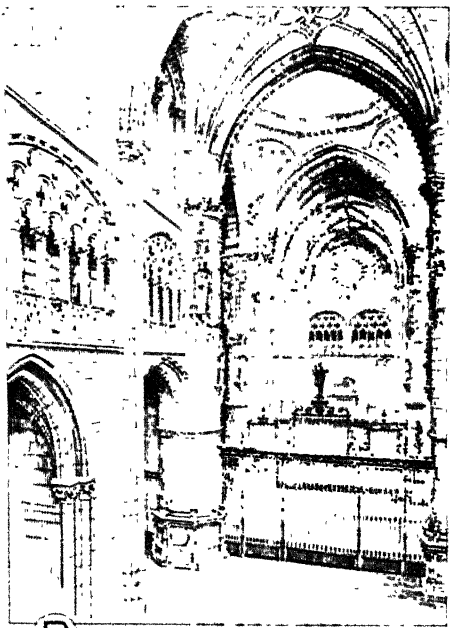
1. INFLUENCES

i. Geographical.—The geographical position of Spain in the south-west of Europe is unique ; it is only separated from France on the north by the chain of the Pyrenees Mountains and from Africa on the south by the narrow Straits of Gibraltar ; thus, apart from the Pyrenees and its frontier on Portugal, it is entirely surrounded by sea, and hence Spain is known as " The Peninsula." The country is thrown into natural divisions by mountain chains and sierras or low rocky hills, which run like bastions across it from west to east, and, with the barren steppes, made natural boundaries for rival races and kingdoms, while an uncultivated stretch of land together with four river courses divide Spain and Portugal. There was French influence in the north and Moorish influence in the south. The kingdom of Granada, the most fertile plain in the country, where the Moors held out until the close of the Gothic period, was entirely surrounded by mountains.

ii. Geological.—" Rocky Spain " is a short and graphic description of the geological conditions which prevail throughout the Peninsula, which is itself a great massif of rock, including the Sierras of Castile in the north, the mountains of Toledo in the middle, and the Sierra Morena in the south. Thus there is granite, especially in the north ; limestone in the south and the basin of the Ebro ; red sandstone in the Pyrenees and Andalusia, and eruptive rock everywhere, while semi-marbles are scattered throughout the country.



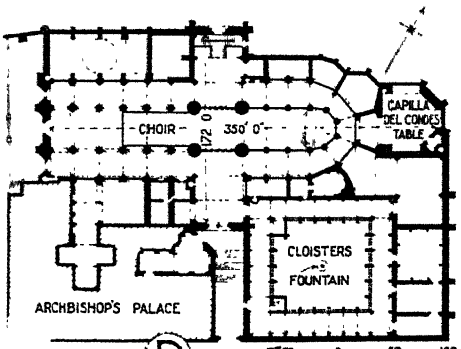
A CAPILLA DEL CONDESTABLE



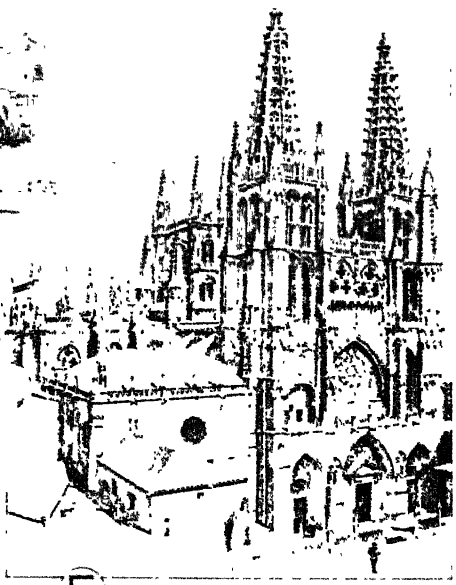
B TRANSEPTS & CIMBORIO



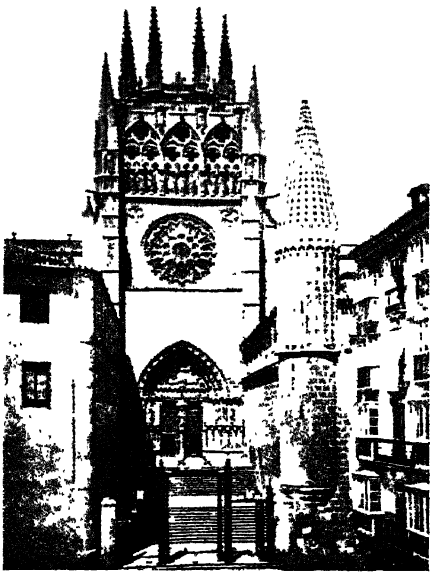
C EXTERIOR FROM S.E.



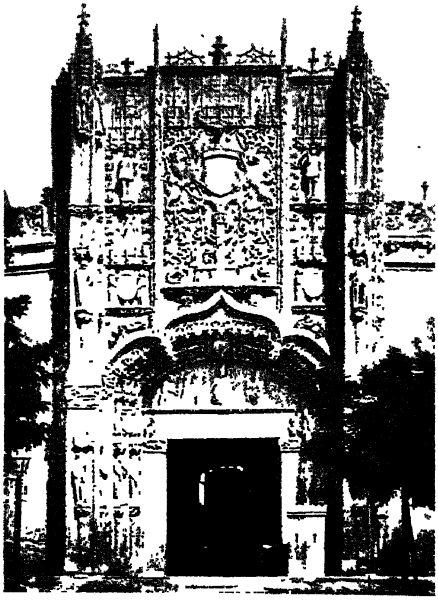
D PLAN



E EXTERIOR FROM W.



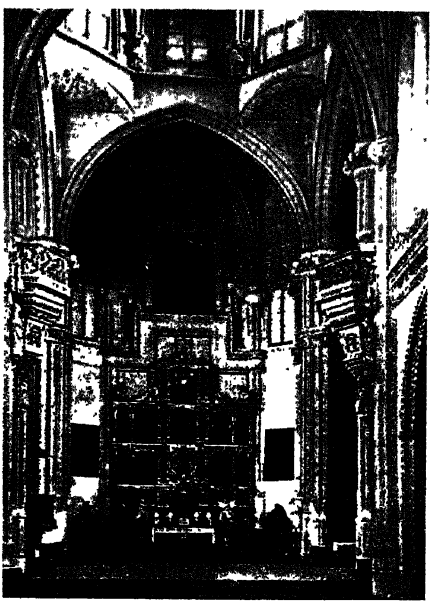
A. Burgos Cathedral: Transept



B. College of S. Gregorio, Valladolid



C. Seville Cathedral: Nave looking E.



D. S. Juan de los Reyes, Toledo

Architecture is therefore naturally carried out in these various sorts of stone, while eruptive rock served for the rubble walling with brick bonding courses and quoins which was used under Moorish influence with much success, as in the towers and gates of the city of Toledo; while in Valladolid bricks of Roman character are laid in thick mortar beds. There are few forests in Spain, and the conspicuous absence of timber suitable for building accentuates still further the predominance of stone in architecture.

iii. Climatic.—The climatic variations are as marked as geographical and as different as geological conditions; but there are four chief varieties of climate. In the provinces along the north and north-west sea-coast, the climate is mild, equable, and rainy, with the greatest rainfall at Santiago da Compostela in the west. The most marked variety of climate is that of the great central table-land and the basin of the Ebro, with great extremes of temperature, as in Madrid and Burgos; while the plains of Castile are snow-covered in winter and dust-laden in summer. The middle climate along the Mediterranean is moderate and the southern in Andalusia is sub-tropical like Africa, with the greatest heat in Granada. The term "sun-burnt Spain" indicates the nature of the climate which influenced the architecture of the Peninsula with its small windows and thick walls. Many large Gothic church windows, derived from France, were indeed often blocked up with stone in after years to keep out the scorching sun.

iv. Religious.—The constant warfare waged against the Moors, which was religious even more than racial, gave a certain unity to the Roman Catholic States in the Peninsula. It has also always been characteristic of Spain to be united in allegiance to the papacy, and the great church of Santiago da Compostela in the west was a pilgrimage centre of even more than national importance. Spain is well styled the most Catholic country in the world, with her ten archbishoprics, forty-five bishoprics, and ubiquitous monastic establishments, both for men and women. It is therefore not surprising that in "priest-ridden Spain" the paramount power of the priestly hierarchy should have instituted the church ceremonials and elaborate ritual, which determined the planning of cathedrals and churches with their great sanctuaries and enormous chapels of the Spanish grandees. The Mahometan religion, introduced by the Moors in the Peninsula, forbade the human figure in sculpture and decoration and encouraged geometrical ornament, and the result of this ordinance is seen in the extreme richness and intricacy of surface decoration, even in Christian churches, on which craftsmen trained in Moorish traditions were employed. The establishment of the Spanish Inquisition (A.D. 1480) in Castile and later in other provinces was designed to bring about national unity by first securing religious unity. This inquisitorial scheme resulted in the expulsion from Spain both of Jews and Mahometans, who were valuable assets in commercial and industrial life, and Spain was thus materially weakened by their departure.

v. Social.—The Christian states of Castile, Leon, Navarre, Aragon, and Portugal were growing up simultaneously, and gradually driving the Mahometans into Andalusia. After many intermittent successes, such as the capture of Toledo (A.D. 1084), Tarragona (A.D. 1089), Saragossa (A.D. 1118), and Lerida (A.D. 1149), the battle of Tolosa (A.D. 1212) was the final turning-point of the decline of Mahometan influence. Ferdinand III (A.D. 1217–52) united Castile and Leon, and won back Seville and Cordova from the Moors. As a result of the exultation over the conquest of the

Mahometans, Gothic art in this district, aided too by the plunder taken from the infidel, received a great impetus. James (A.D. 1213–76), King of Aragon, advanced into the east of Spain until the kingdom of Granada was the only portion left to the Mahometans. As to general social conditions in Spain there was a great gulf fixed between the grandee and the common people, and an equally strongly marked dividing line between town folk and country folk. In the eastern districts, where the feudal system was strong, class distinctions were further accentuated, and only a small proportion of the population, including citizens of chartered towns, were free; while under the system of land tenure the majority were practically slaves throughout the Middle Ages, a condition which produced the peasants' revolt of the fifteenth and sixteenth centuries. From some of the internal dangers the country was delivered by Ferdinand and Isabella (A.D. 1474–1504), the Catholic sovereigns, who arrogated to themselves supreme power. They made use of Church, nobles, and cities as instruments of their government, established police against brigandage, annexed the power and money of the military orders, and enforced military service from the nobles. They even reduced the Cortes to a money-granting machine and gradually crippled commerce and industry through the control of officials and the imposition of excise duties, and thus established an inquisition in commerce as well as in religion. Social life in Spain is always associated in our minds with the "Spanish grandee" and the Catholic priest, and indeed churches and monasteries are the chief architectural monuments, while in domestic architecture there is little of importance except the houses of the nobility.

vi. Historical.—The outstanding feature of Spanish history during this period is the astonishing connection of Spain, not only with France, her near neighbour, but also with England through royal marriages; with Italy through papal supervision and the quarrels with the Angevins in Naples and Sicily, and with the Moors from Africa; and all this, as we shall see, affected in varying degrees the architecture of the Peninsula. After the Romans left Spain the Vandals and Visigoths took possession, and in A.D. 710–13 the country was invaded by the Moors from North Africa, whose influence was continuous for 800 years (p. 835). The evidence of this is seen in the south in curious construction and exuberant detail, and occasionally also in the north owing to the demand there for Moorish craftsmen with their superior ability, for although Toledo was captured by the Christians in A.D. 1085, the Spanish conquests were only gradual. King Peter of Aragon (A.D. 1196–1213) came in contact with Italy, for he was crowned in Rome and as a prince of France died there in the defence of the Albigenses, and these connections were not without influence on Spanish architecture. From the death of James the Conqueror in A.D. 1276 to the death of Martin I in A.D. 1410, the kings of Aragon were at war with the Angevin party in Naples and Sicily, and this may have contributed to the introduction of certain Saracenic and other architectural features from those countries. The final expulsion of the Moors did not take place till the fall of Granada in A.D. 1492, and so great was the interest which this decisive event roused in all Christendom that a thanksgiving service was held by order of Henry VII in old S. Paul's Cathedral, London. Thus were laid the foundations of a united Spain which then prepared to expand abroad.

2. ARCHITECTURAL CHARACTER

The character of Gothic architecture in Europe, which gives the general principles common to all countries, has already been given (p. 300). The salient aspect of Spanish Mediæval architecture, which in this chapter includes the Romanesque and Gothic periods, dating approximately from A.D. 1000 to 1500, is the evident influence of Moorish art, which spread from the south and more especially from the Moorish capital, Toledo. The Gothic style followed the Romanesque, of which little remains, and was most highly developed in Catalonia where, though mainly on French lines, the grand scale of the single-span vaulted interiors gives it, as at Gerona (p. 536), a specifically Spanish character, and the same may be said of Leon Cathedral, which surpasses its French prototype at Amiens both in the expanse of window openings and the tenuity of the piers. Moorish influence made itself felt in such Saracenic features as the horseshoe arch and pierced stone tracery, and notably in rich surface decoration of intricate geometrical and flowing patterns (pp. 537, 538), for which Saracenic art is remarkable, as in the Sinagoga del Transito, Toledo (A.D. 1360–66), while the early Spanish churches seem to have been the work of Moorish craftsmen. Church exteriors are flat in appearance, owing to the chapels which are so frequently inserted between the buttresses (p. 536). Unlike French Gothic, large wall surfaces and horizontal lines are conspicuous, and generally there is excessive ornament, due to Moorish influence, without regard to its constructive character (p. 524 B). The cloisters of many cathedrals, as Barcelona (p. 539), Toledo, Segovia (pp. 530 C, 537 A), and Lerida, are very characteristic. In the later period the grafting of Classical detail on Gothic forms produced most picturesque features, transitional in style, but they come under Renaissance rather than Gothic architecture (p. 677).

3. EXAMPLES

ECCLESIASTICAL ARCHITECTURE

Santiago da Compostela Cathedral (A.D. 1078) is one of the most remarkable Mediæval buildings in Spain and owes its size and character to having been a great pilgrimage centre. The plan resembles S. Sernin, Toulouse, but with three instead of five aisles, and with similar transepts and chevet due to French Gothic influence. The nave has a barrel vault and the aisles cross-vaults. The Portico de la Gloria (A.D. 1188) extends across the whole width of the church and is undoubtedly " one of the greatest glories of Christian art," with its range of statues of the apostles and major prophets, its semicircular-arch with statues of the twenty-four elders, and tympanum with sculptured representation of the Last Judgment.

Avila Cathedral (A.D. 1091), with its chevet built astride the city walls, is one of the most interesting in the Peninsula. The principal doorway (p. 529 A) dates from the eleventh century, but most of the work is of later date. The chevet has double aisles and semicircular chapels in the thickness of the walls, whose slit windows indicate that it was part of the city fortifications. The " coro " or choir west of the transepts, the fine cloisters, the widely spaced nave bays, twin western towers, and unique hammered-iron pulpit (p. 538 A) are features of this church.

Salamanca Old Cathedral (A.D. 1120–78) forms, with the New Cathedral

(A.D. 1509), a fine group above the River Tormes. The Romanesque building, which seems to have been influenced by the churches of Aquitaine and Anjou, is specially famous for its dome, which is treated internally (p. 537 D) with great originality. It has plain pendentives, supporting a high drum pierced with two storeys of windows and crowned with a stone ribbed cupola. The exterior (p. 537 F) is effective, with high drum, semicircular windows, angle turrets, and octagonal spire with an unusual entasis.

S. Isidoro, Leon (A.D. 1149), is a cruciform church and bears some resemblance to Santiago da Compostela Cathedral, with a barrel-vaulted nave and apsidal chapels (p. 537 C) on the eastern side of the transepts and usual Romanesque details.

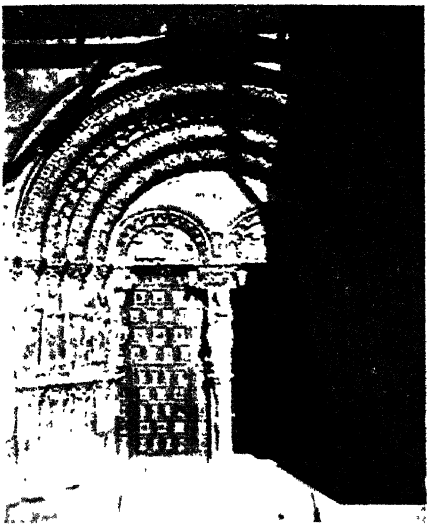
Burgos Cathedral (A.D. 1230) (pp. 523, 524 A) is irregular in plan and one of the most poetic of all Spanish cathedrals. The two western towers, with open-work spires (p. 523 E), recall Cologne, and a richly treated central lantern or " cimborio " is a marked feature of the exterior (p. 523 C). The interior has elaborate triforium tracery, massive piers rebuilt to support the high " cimborio " when it was completed in A.D. 1567, and fine transeptal circular windows (p. 523 B). The " coro " is in the usual Spanish position west of the crossing, which reduces the nave to a vestibule (p. 523 D). Among the side chapels, which are of extraordinary size, the octagonal Capilla del Condestable (A.D. 1487), over 50 ft. in diameter, is specially remarkable for the beauty and magnificence of its late Gothic detail (p. 523 A), and the Chapel of S. Anna has an altar-piece which is a miracle of richness (p. 538 B).

Toledo Cathedral (A.D. 1227–1493) (p. 536 D), divided into five aisles and a range of side chapels, resembles Bourges Cathedral in general plan. It is about the same length, but nearly 50 ft. wider, with the choir enclosure, as usual in Spain, west of the crossing (p. 529 B). A singularly shallow sanctuary, with immense wooden " retablo," flanked by tiers of arcaded statuary, is terminated by a chevet of double aisles and chapels completing a most impressive interior. The exterior shows the low roof, usual in most Spanish churches. The Chapel of Santiago (A.D. 1435) (p. 530 B), in the chevet, erected by Count de Luna as a mortuary chapel, has doorways with elaborate screenwork and great frilled arches, supporting the octagonal vault, all contributing their wealth of detail to this grandiose composition. There are fine stained-glass windows, beautiful carved choir stalls, and a treasury, rich even for Spain, containing the famous silver-gilt " Custodia "—the flower of Spanish Gothic miniature art.

The College of S. Gregorio, Valladolid (A.D. 1488) (p. 524 B), now the town hall, has a sculptured façade embellished with statues, heraldic devices, and a genealogical tree of Ferdinand and Isabella, all framed round with canopied niches and pinnacles, which show the influence of Moorish art in church ornament. The court (p. 537 H) has arcades in the exuberant style of the later period, with three-centred arches, twisted columns, and intricate Moorish-like carving (p. 537 G).

S. Pablo, Valladolid (A.D. 1276–1463), has a façade (p. 529 C) and internal doorways which, in intricacy of detail, also show Moorish influence.

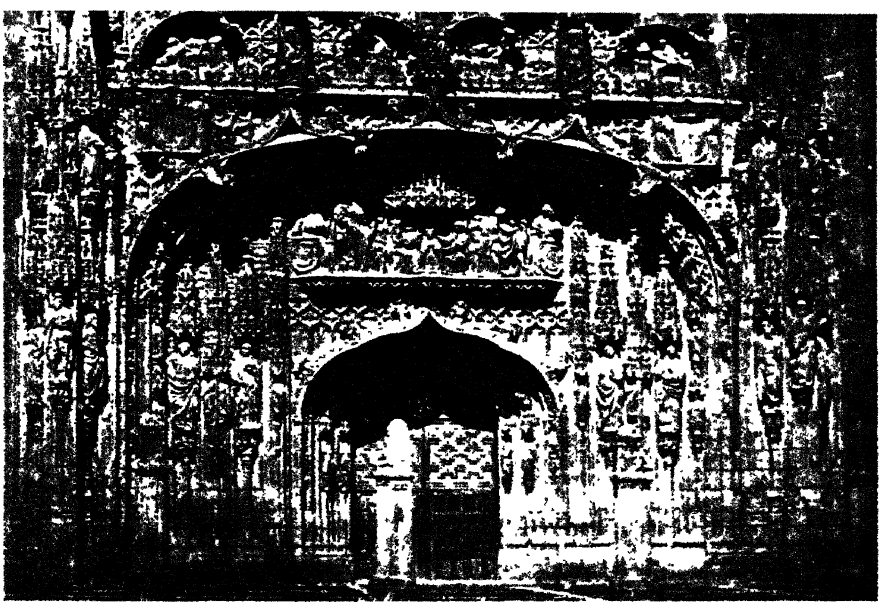
Barcelona Cathedral (A.D. 1298) (pp. 536 B, 539) is remarkably fine, with nave vaulted in square and aisles in oblong bays, in the Italian method. There is a fine western lantern on pendentives, slightly projecting transepts surmounted by towers, as at Exeter (p. 343), and chevet of nine chapels. The thrust of the vault is counteracted by the deep internal buttresses which enclose chapels along the aisles, as at Albi in France (p. 453). The vault, as



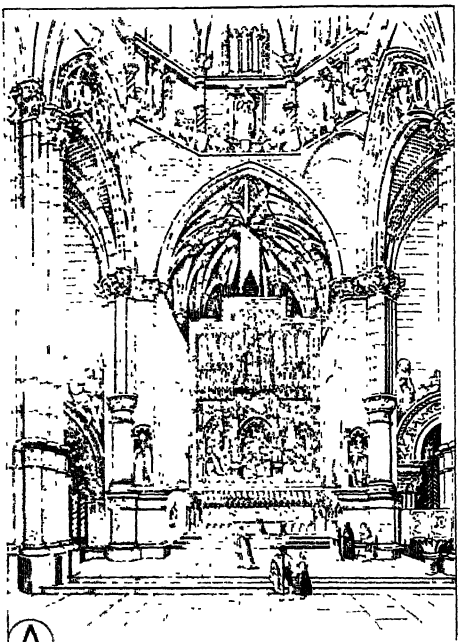
A. Avila Cathedral: Principal Doorway



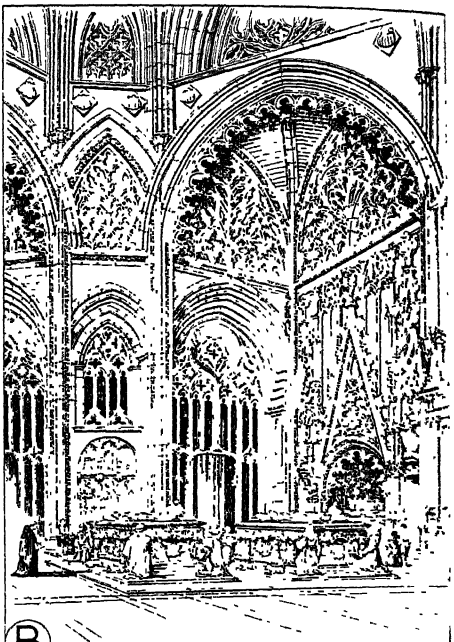
B. Toledo Cathedral: Interior



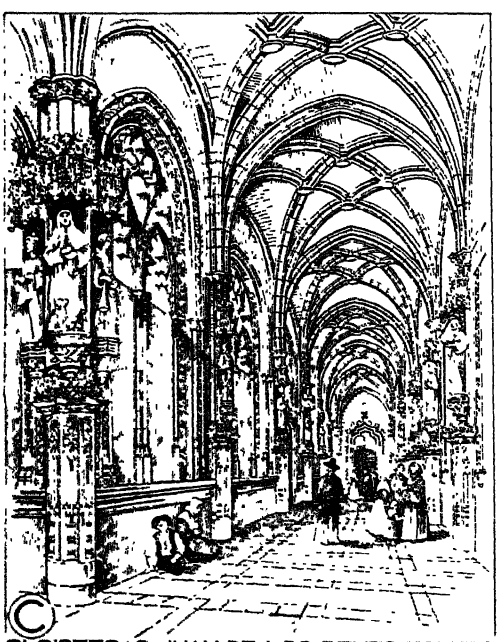
C. S. Pablo, Valladolid. Principal Doorway



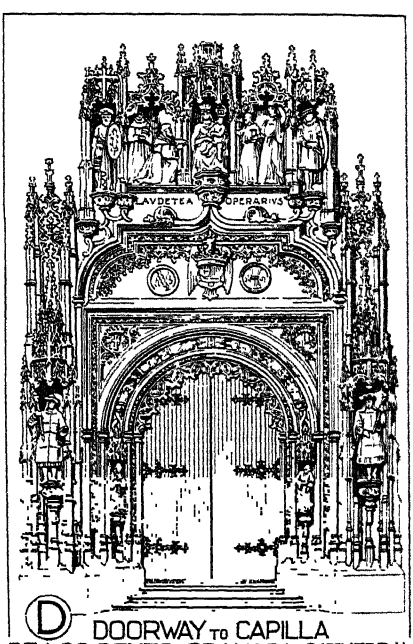
A HIGH ALTAR: SARAGOSSA CATHEDRAL



B CHAPEL OF SANTIAGO : TOLEDO.



C CLOISTER: S. JUAN DE LOS REYES: TOLEDO



D DOORWAY TO CAPILLA DE LOS REYES: GRANADA CATHEDRAL

is usual in Spain, is exposed externally and roofed by tiles. The fine cloisters were completed about A.D. 1450.

Gerona Cathedral (A.D. 1015–1458) (p. 536 C) is another instance where buttresses have internal chapels between them. There are no aisles, and the nave (A.D. 1458), 73 ft. wide, in four compartments, has the widest Gothic vault in Europe, and this, together with the length of 275 ft., produces a fine effect with the enclosed choir and chevet (A.D. 1015–1346) at the sanctuary end. The central hall of the Royal Courts of Justice, London, although only 48 ft. in width, will give an idea of this interior.

S. Maria del Mar, Barcelona (A.D. 1328–83) (p. 536 A), is a splendid town church, characterised both internally and externally by severe simplicity, and the front to the street is flanked by two octagonal pinnacles. The roof vaulting rests upon widely spaced octagonal granite piers. The nave and aisles are of great height ; there is no triforium and only small clear-story windows in the vault spandrels.

S. Justo y Pastor, Barcelona (A.D. 1345), has an aisleless nave 45 ft. wide, with chapels between internal buttresses. The altar stands in an unusual position in front of stalls ranged round the apse.

S. Maria del Pino, Barcelona (A.D. 1453), similar in plan, has a fine heptagonal apse and western circular window.

Seville Cathedral (A.D. 1401–1520) (p. 524 C) is the largest Mediæval cathedral in Europe, and indeed the largest church in the world, with the exception of S. Peter, Rome. It owes its plan and size, with nave, double aisles and side chapels, to its erection on the site of a mosque. This also controlled its rectangular outline, about 400 ft. by 250 ft., and its square east end, unusual in Continental churches, to which is added a small apse. The Cathedral is indeed enormous, as may be realised by comparison with Westminster Abbey. The nave, about 45 ft. wide in the clear, is nearly half as wide again as Westminster nave ; each of the four aisles is approximately equal in width to the Abbey nave, and in addition there are surrounding chapels as wide as the aisles, so that with the chapels, Seville Cathedral is about eight times the width of Westminster nave. It has a total area, including the patio, of about 22,000 square yds. as against Milan Cathedral with 13,984 square yds., and S. Paul's, London, with 9,336 square yds. The interior is impressive, owing to its great size and height, although the nave vault (130 ft. high) has ribs which are somewhat confused in design and overloaded with bosses. The thirty-two immense clustered piers and numerous stained-glass windows produce an imposing effect, in spite of the absence of a triforium. The richness of the interior is enhanced by the sculptured stalls of the " coro " enclosed in two bays of the nave, the fine " reja " or grille, the " retablo," choir stalls, and archbishop's throne. The exterior, owing to many additions, has a certain shapelessness and absence of skyline, but bears a general resemblance to Milan Cathedral, although of a simpler Gothic type and less fanciful in detail. The slender " Giralda," originally the minaret of the mosque, gives this massive group a curiously Oriental aspect (pp. 839, 843).

S. Juan de los Reyes, Toledo (A.D. 1476) (pp. 524 D, 530 C), is a royal sepulchral chapel erected by Ferdinand and Isabella for a purpose similar to that of Henry the Seventh's Chapel, Westminster. This late Gothic building, with traces of the incoming Renaissance, has a sculptured façade and " cimborio " with lofty pinnacles. The interior (p. 524 D) is chiefly notable for the raised galleries for the use of kings and nobles, surmounted by the characteristic octagonal " cimborio " with its beautiful squinch arches. The

two-storeyed cloisters (p. 530 C), with their traceried windows and canopied statues, are held to be the most beautiful Gothic creations in Spain.

Valencia Cathedral (A.D. 1262) and **Leon Cathedral** (A.D. 1260) show French influence.

Lerida Cathedral (A.D. 1203–78) (p. 536 E), now much mutilated and used as barracks, is an impressive early building with octagonal " cimborio," three eastern apses, and adjacent cloisters, and the roofing slabs rest directly on the stone vaults.

The **Monastery, Belem** (A.D. 1499), is a fine ecclesiastical monument in Portugal, the western part of the Iberian peninsula. The cloisters have a two-storeyed arcade covered with delicate sculpture, and the church is a richly ornamented late Gothic structure.

The **Monastery, Batalha,** has a unique fourteenth-century church with an octagonal tomb chapel, and forming a fine architectural group.

The **Cistercian Church, Alcobaça,** is severe and simple in style, and in its interior resembles a German " hall " church.

SECULAR ARCHITECTURE

The finest secular architecture is found in Catalonia, as seen in the much altered **Palacio de la Audiencia, Barcelona,** with its remarkable court containing a picturesque external stairway (p. 535 B) ; the **Casa Ayuntamiento, Barcelona** ; the **Alcazar, Segovia** (A.D. 1352) ; the **Castilla del a Mota, Medina** (A.D. 1440) ; the **Torre del Clavero, Salamanca** (A.D. 1480) ; the **Gateway of S. Maria, Burgos,** and the remarkable **Puente de Alcantara, Toledo** (A.D. 1258), which spans the Tagus and is protected by a defensive tower (p. 186).

The **Ducal Palace, Guadalajara** (A.D. 1461) (p. 535 A), has a picturesque court, surrounded by two storeys of ornately sculptured arcades, with twisted columns and multifoil arches.

La Lonja de la Seda, Valencia (A.D. 1482) (p. 535 D), used as a silk exchange, has an unbalanced façade of nearly 200 ft., with central tower, an east wing with large gateway and two pointed windows, and a west wing with two rows of square-headed Gothic windows surmounted by open galleries.

The **Castle, Medina del Campo** (A.D. 1440) (p. 535 E), is stern in aspect, with circular towers, battlemented parapets, and windowless curtain walls, and a high tower commands the surrounding country.

The **Puerta del Sol, Toledo** (A.D. 1200) (p. 535 H), forms part of the town walls of the ancient city, and with its horseshoe arches, intersecting arcades, and Moorish battlements indicates that the Mediæval Spaniard, with craftsmanlike skill, applied the art of the time to all secular buildings.

The **Puerta de Serranos, Valencia** (A.D. 1349) (p. 535 F), with its Mediæval fortifications, has two polygonal towers flanking the gateway, above which is traceried wall panelling and a gallery on enormous corbels.

These and many more similar buildings are eloquent of the power and position of the Catholic Church and of the Spanish grandee, while the well-preserved town walls of such old-world cities as Avila and Leon indicate the unsettled conditions of those times.

4. COMPARATIVE ANALYSIS

A. **Plans.**—Cathedral plans are of great width and comparative shortness, and the " coro " or choir, like that in Westminster Abbey (p. 353 D),

is generally in the nave, west of the crossing, but with a low screened passage between choir and sanctuary, as in Burgos (p. 523 D), Toledo (p. 536 D), and Barcelona (p. 536 B). This central enclosure follows the Early Christian basilican plan (p. 198 K), and supplied extra space for the clergy as necessity arose; it avoided the extension eastwards of the sanctuary usual in England, and sometimes it was enclosed by high walls forming a church within a church. Chapels are numerous and large, often surrounding the whole cathedral, and the "parroquia" or parish church is sometimes included in the cathedral area, as at Seville. The "cimborio" (pp. 523 B, 524 D) at the crossing of nave and transepts is similar in treatment to those of France; thus S. Sernin, Toulouse, and Burgos Cathedral resemble each other in arrangement, as do Valencia Cathedral and S. Ouen, Rouen, in design. The characteristic octagonal vaults over the crossing and chapels, intricate in design and ingenious in construction, were probably inspired by Moorish art.

B. Walls.—French wall treatment was largely followed, but characterised in the later period, owing to Moorish influence, by extreme and even fantastic surface ornament. There is an absence of skyline, and Burgos has effective horizontal arcades instead of gables, on the lines of the façade of Notre Dame, Paris. Many façades, as that of the College of S. Gregorio, Valladolid (p. 524 B), have a bewildering number of niches containing statues, while figures supporting heraldic emblems combine to leave no vacant space, thus rivalling the elaboration of a "retablo." Traceried open-work spires, like those at Burgos, were frequent (p. 523 E).

C. Openings.—Arcades were of special service in sunny Spain to form effective screens against the sun, and are numerous; those surrounding the "patio" or court of the Ducal Palace, Guadalajara (p. 535 A), La Audiencia, Barcelona (p. 535 B), and the cloisters of Segovia Cathedral (p. 537 A) are typical examples. The early use of the pointed arch in nave arcades is another feature probably due to Moorish influence. Doorways as those of S. Vicente, Avila, and La Cartuja, Burgos (p. 537 E), are French in design with sculptured figures and luxuriant capitals, while later doorways, as at Cordova (p. 535 C), Granada (p. 530 D), and Segovia (p. 537 B), have elaborate features enclosed in intricate framework, due to Moorish craftsmanship. Windows were often carried to excess, as in Leon Cathedral, where most of the wall surface of the clear-story is devoted to great traceried windows, sometimes 40 ft. high. In the centre, and even in the south, as at Segovia (p. 537 A) and Seville, openings are large, and stained glass was much used, owing to French influence, but many windows, as at Avila and Barcelona (p. 539), have been partially blocked up as unsuitable to the sunny climate. The window in the Bishop's Palace, Alcala (p. 535 G), shows a novel tracery design, obviously due to Moorish influence.

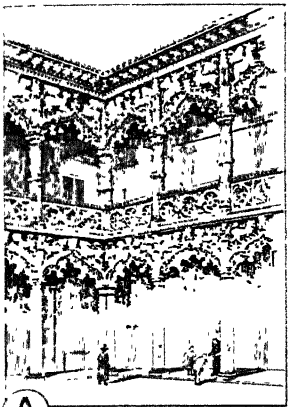
D. Roofs.—Vaulting was freely used, but owes its character to tracery, bosses, and ribs, which produce a good effect, although the lines are not always good, and nothing comparable to English vaulting was produced (pp. 523 A, 535 C). The vaults were often without external wooden roofs found in other countries, and, as at Seville and Barcelona (p. 539), bricks and tiles rest directly on the vaults, and form a fireproof roof. In Catalonia wide interiors were successfully vaulted in one span, that at Gerona being no less than 73 ft. wide (p. 536 C). The boldest and most original vaults are those that support galleries across the western ends of churches, extending through nave and aisles in three spans or in one span across the nave, and their decorated soffits frame in the view of the interior from the entrance. The

" cimborio " over the crossing is frequently octagonal, and is supported on ornate squinch arches, thrown across the angles of the square below, thus bringing it to an octagon (pp. 523 B, 524 D, 530 A).

E. **Columns.**—The massive piers supporting the lantern over the crossing, as at Burgos (p. 523 B), are circular in plan and contrast with the great octagonal piers of S. Sernin, Toulouse. In Seville Cathedral great column-like piers are employed for the arcades (p. 524 C), similar to those of Milan, but without the tabernacle capitals. The circular piers so often used, with their fine shaft articulation, resemble those at Beauvais Cathedral, and there are capitals in Saragossa Museum (p. 537 J) which indicate the prevailing Romanesque influence.

F. **Mouldings.**—Refinement is not the usual characteristic of Spanish mouldings, but original and capricious forms were mingled with others borrowed from France (p. 537). In Catalonia the best and most artistic result was produced in a restrained manner, as in S. Maria del Mar, Barcelona, where every moulding has its purpose and expression, but this is far from being usual in Spain.

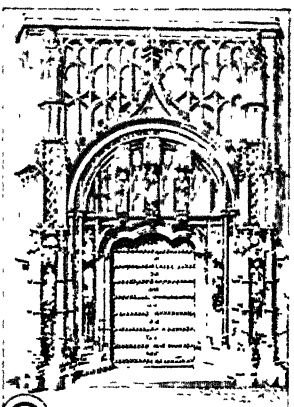
G. **Ornament** (p. 538).—The most decorative feature in Spanish churches is the vast " retablo " (reredos), which, as at Saragossa and Oviedo, is often as wide as the nave and as high as the vault (pp. 524 C, 530 A). It is of wood, stone, or alabaster, and crowded with niches, figures, canopies, and panelling. The " retablos " at Toledo and Seville, resembling the great English altar screens, as at Winchester, are probably the richest specimens of Mediæval woodwork in existence, and painting and gilding were used to heighten the effect. Sculpture in stone and marble is often life-size, naturalistic, and expressive (p. 538 B, E, J), and, however deficient in other qualities, it helps to produce the impressive, if sensational, interiors of Spanish churches. Classic tradition led to refinement of detail, which contrasts with the often grotesque features of Northern Gothic, but the general design frequently suffers from the multiplication of accessories. Stained glass, as used at Seville, Oviedo, and elsewhere, was Flemish in style, heavy in outline, and strong to gaudiness in colouring. " Rejas " or lofty grilles (p. 523 B) in hammered and chiselled iron are also characteristic, especially in the later period, the long vertical bars being relieved by figures in repoussé work, either single, or in duplicate back to back, and by freely employed crestings and traceries, and there are few productions of the period in Spain which are more original and artistic. Magnificent stalls provided with separate canopies and tall spires, as at Avila (p. 538 C), are common, and Barcelona Cathedral has some resembling those at Chester, while altars (p. 538 B), bishops' thrones, lecterns, and choir desks were also very elaborate, and the unusual pulpit of hammered iron at Avila Cathedral is a remarkable specimen of the smith's craft (p. 538 A). The Royal Tomb, Miraflores, near Burgos (p. 538 J), is perhaps the most elaborate Mediæval monument in Spain; it is star-shaped and meticulously carved, with angels, flowers (p. 538 H), and canopied statuettes, all supporting the recumbent effigies of King John II and his Queen. The Infante's Tomb, Miraflores (A.D. 1470) (p. 538 E), is elaborate in heraldic devices, kneeling figures, and tabernacle work (p. 538 D, F, G). The cathedrals are veritable treasure-houses of beautiful Christian craftsmanship, displayed in holy crosses, reliquaries, monstrances, gold and silver images and candelabra, and as they have never been despoiled of their treasure, the cathedrals form the chief museums of art in Spain.



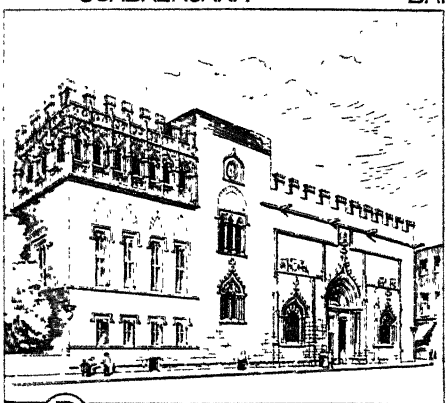
A COURT. DUCAL PALACE GUADALAJARA



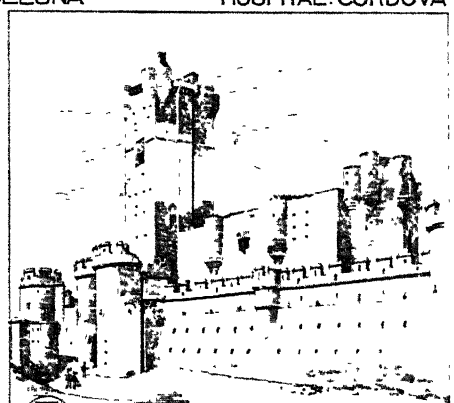
B COURT: THE AUDIENCIA BARCELONA



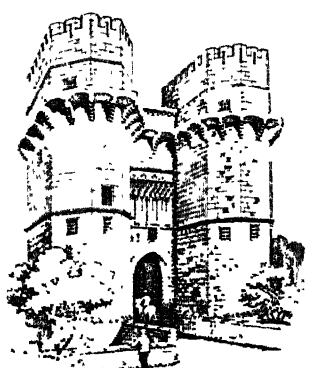
C DOORWAY FOUNDLING HOSPITAL: CORDOVA



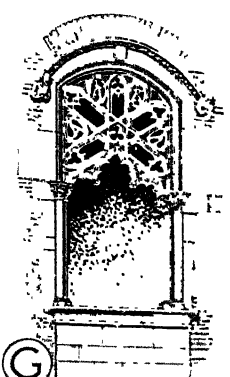
D LA LONJA: VALENCIA



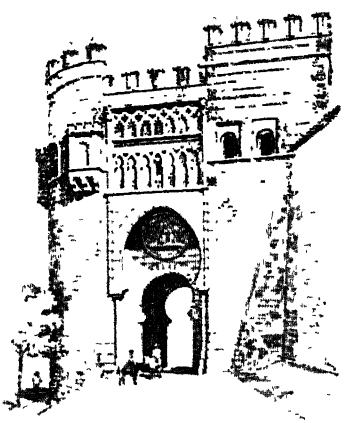
E CASTLE. MEDINA DEL CAMPO



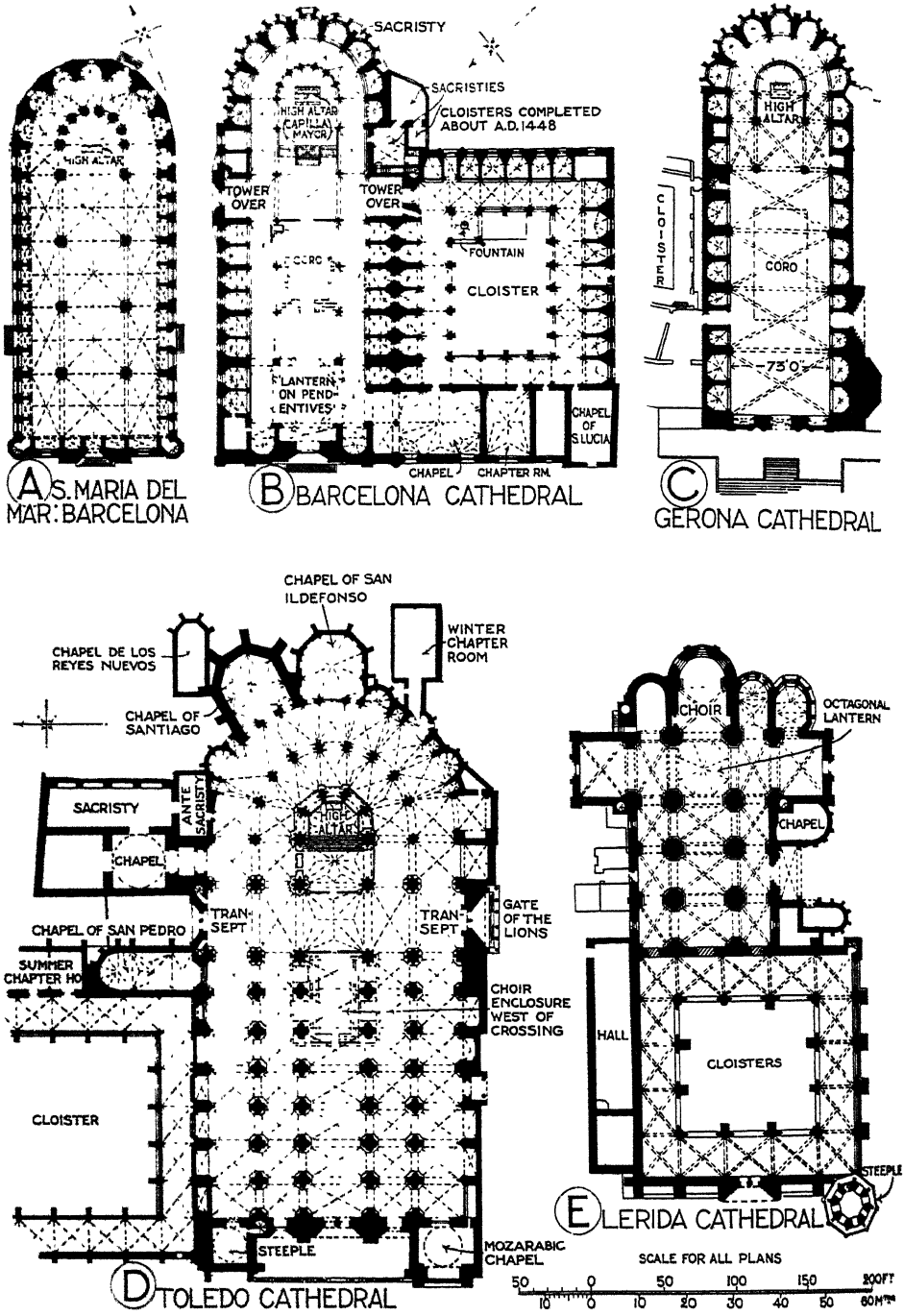
F PUERTA DE SERRANOS VALENCIA

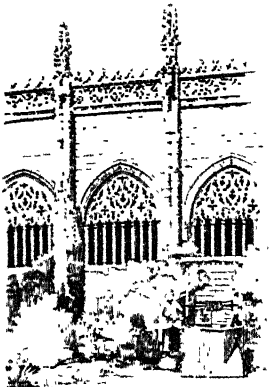


G WINDOW IN BISHOP'S PALACE: ALCALA



H PUERTA DEL SOL: TOLEDO

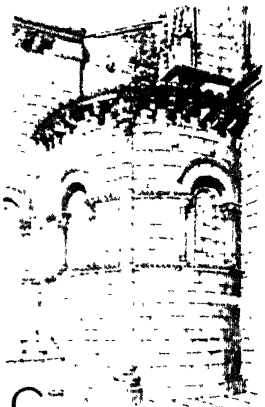

HIGH ALTAR
A S. MARIA DEL MAR: BARCELONA
SACRISTY
SACRISTIES
CLOISTERS COMPLETED ABOUT A.D. 1448
HIGH ALTAR
CAPILLA MAYOR
TOWER OVER
TOWER OVER
CORO
FOUNTAIN
CLOISTER
LANTERN ON PENDENTIVES
CHAPEL OF S. LUCIA
CHAPEL
CHAPTER RM.
B BARCELONA CATHEDRAL
HIGH ALTAR
CLOISTER
CORO
75'0"
C GERONA CATHEDRAL
CHAPEL OF SAN ILDEFONSO
WINTER CHAPTER ROOM
CHAPEL DE LOS REYES NUEVOS
CHAPEL OF SANTIAGO
SACRISTY
ANTE SACRISTY
HIGH ALTAR
CHAPEL
CHAPEL OF SAN PEDRO
TRANSEPT
TRANSEPT
GATE OF THE LIONS
SUMMER CHAPTER HO
CHOIR ENCLOSURE WEST OF CROSSING
CLOISTER
STEEPLE
MOZARABIC CHAPEL
D TOLEDO CATHEDRAL
CHOIR
OCTAGONAL LANTERN
CHAPEL
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E LERIDA CATHEDRAL
SCALE FOR ALL PLANS
50 0 50 100 150 200FT
10 0 10 20 30 40 50 60M



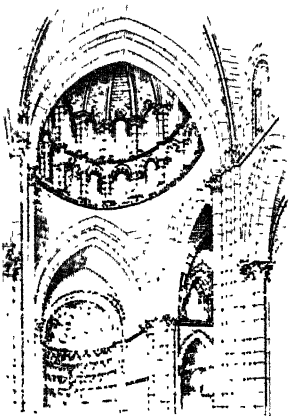
A CLOISTERS SEGOVIA



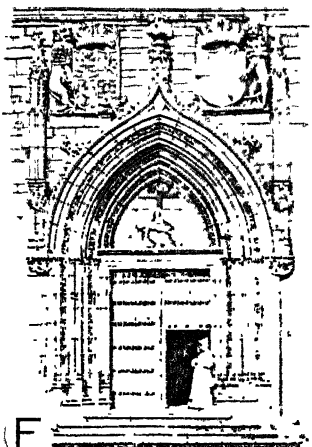
B DOORWAY. S. CRUZ. SEGOVIA



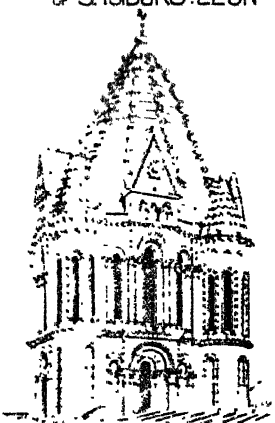
C APSE COLLEGE OF S. ISIDORO. LEON



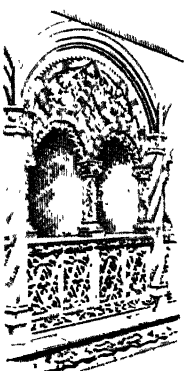
D LANTERN (INT) OLD CATH. SALAMANCA



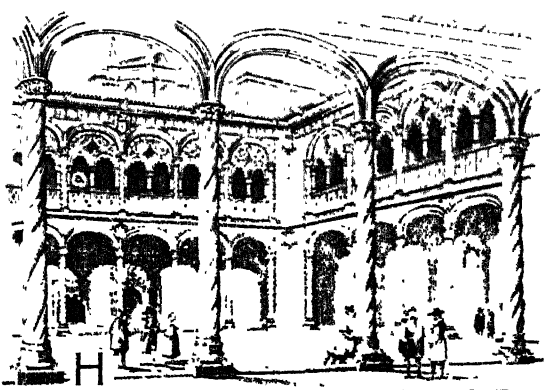
E DOORWAY. LA CARTUJA. BURGOS



F LANTERN (EXT) OLD CATH. SALAMANCA

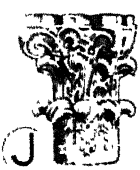


G GALLERY ARCADE AT A

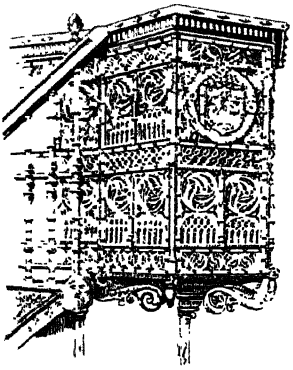


H COURT. COLL. OF S. GREGORIO. VALLADOLID

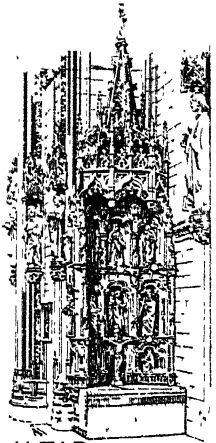




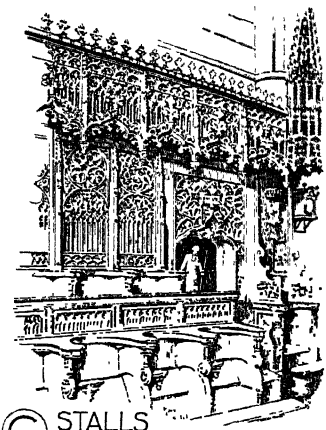
J CAPS. IN MUS. SARAGOSSA



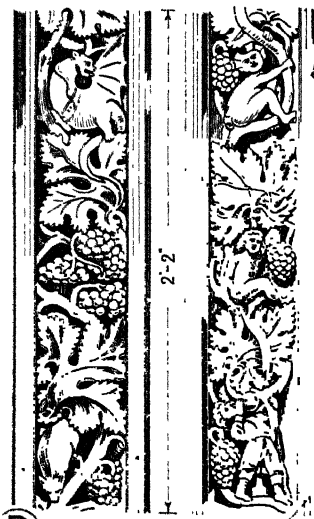
A WROT IRON PULPIT
AVILA CATHEDRAL.



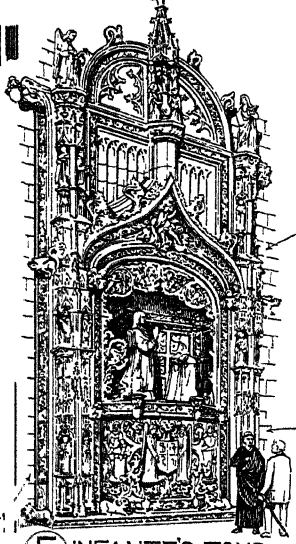
B ALTAR OF S.ANNA
BURGOS CATHL



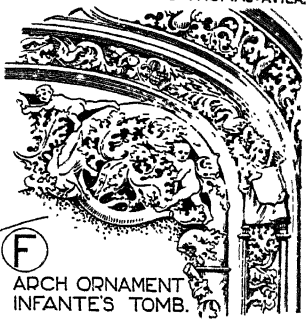
C STALLS
CONVENT OF S THOMAS: AVILA.



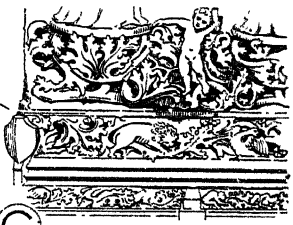
D DETAIL: INFANTE'S TOMB.



E INFANTE'S TOMB
MIRAFLORES.



F ARCH ORNAMENT
INFANTE'S TOMB.

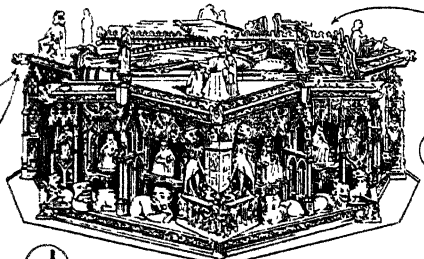


G BASE: INFANTE'S TOMB

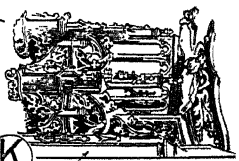




H CORNICE DETAILS.



J ROYAL TOMB: MIRAFLORES.



K QUEEN'S CANOPY.



L PLAN OF TOMB.

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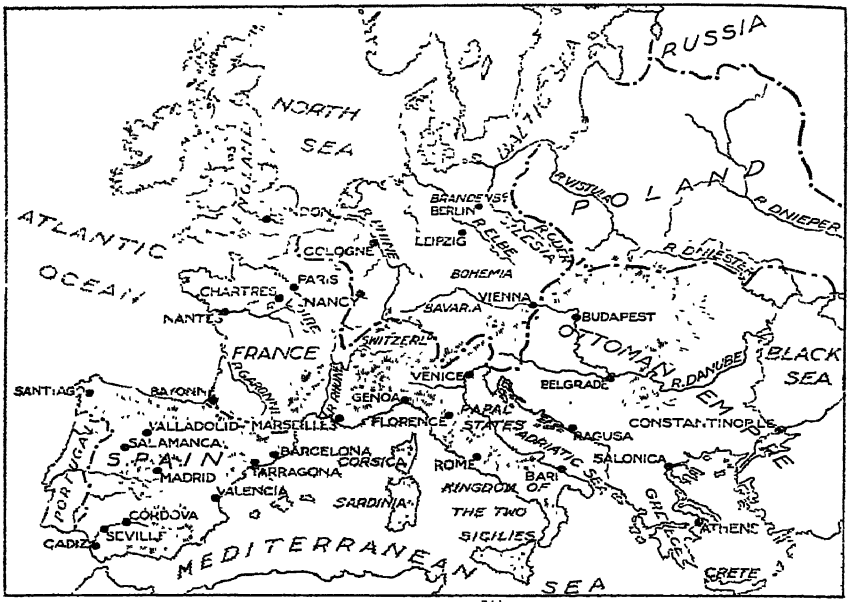
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BARCELONA CATHEDRAL FROM THE CLOISTER ROOF



EUROPE IN THE 17TH CENTURY

RENAISSANCE ARCHITECTURE IN EUROPE

1. INFLUENCES

i. **Geographical.**—The Renaissance of Classic architecture, which started in Italy in the fifteenth century, spread westwards throughout all those countries of Europe which had formed the Western Roman Empire. This general survey of the geographical extent of the insidious new development indicates broadly the lines along which it travelled; while the modifications it underwent, owing to geographical position, are explained in detail under each country. The Eastern Empire, with its capital at Byzantium, was gradually falling before the Turk, and therefore these districts did not come under the influence of the new movement. The countries of Italy (p. 551), France (p. 619), Germany (p. 649), Belgium and Holland (p. 661), Spain (p. 673), and England (p. 690) were subject to special geographical influences which affected the character of the architecture.

ii. **Geological.**—Geological formation varies so widely in different parts of Europe that its influence cannot here be taken into account with regard to the whole of Western Europe, but must be considered under each country. Geological conditions, however, are practically continuous in any given country, and they have already been described under the sections on Romanesque and Gothic architecture. The countries of Italy (p. 552), France (p. 619), Germany (p. 649), Belgium and Holland (p. 661), Spain (p. 673), and England (p. 691) were subject to special geological influences which affected the character of the architecture.

iii. Climatic.—The climate, which differs vastly over such an extensive area, is constant throughout the different periods, and has also been productive of widely different architectural treatment in each country to meet the weather conditions, as has been seen in the Romanesque and Gothic periods. The countries of Italy (p. 552), France (p. 619), Germany (p. 640), Belgium and Holland (p. 662), Spain (p. 674), and England (p. 691) were subject to special climatic influences which affected the character of the architecture.

iv. Religious.—The whole trend of religious activities in Europe was affected by the invention of printing, and the consequent spread of knowledge engendered a spirit of inquiry and freedom of thought which, under Wycliffe (A.D. 1324–84) in England and Luther (A.D. 1483–1546) in Germany, had produced a certain desire to break away from Romish influence. This renewed vigour in intellectual life led to Reformation in religion, and Renaissance in literature and architecture, with a consequent outbreak of building activity. In England this took the form of domestic architecture, which had also received a special impulse from the diffusion among laymen of the wealth and lands of monasteries dissolved by Henry VIII. In Italy, on the other hand, where the Reformation took no hold, and where, moreover, comparatively few churches were built during the Middle Ages, there was a revival of ecclesiastical as well as of domestic architecture, and Renaissance churches were erected on a great scale. France, Spain, and the Netherlands were all influenced in different degrees by the new movement, and, as we shall see, this was expressed architecturally in varying ways. The Jesuits, who headed the counter-Reformation, carried the later Renaissance style through all parts of Europe, while at the same time they gave a special character to the churches they erected (p. 546). The countries of Italy (p. 553), France (p. 619), Germany (p. 650), Belgium and Holland (p. 662), Spain (p. 674), and England (p. 691) were subject to special religious influences which affected the character of the architecture.

v. Social.—The new intellectual movement manifested itself earlier in literature than in architecture, and thus had influenced public taste. Dante (A.D. 1265–1321), Petrarch (A.D. 1314–74), and Boccaccio (A.D. 1313–75), by their writings, aided the spread of the newly discovered Classic literature which prepared the ground for a revolt against Mediæval art, in favour of a revival of ancient Roman architecture, while the capture of the old Classic city of Constantinople by the Turks (A.D. 1453) caused an influx of Greek scholars into Italy, and their learning further influenced an age already ripe for change. Amongst the Greek and Roman literature brought to light about this time was the " Treatise on Architecture " by Vitruvius, written in the time of Augustus, which, first issued in Latin at Rome (A.D. 1486), was translated into Italian in A.D. 1521. Erasmus (A.D. 1467–1536), one of the Greek scholars of the period, directed public attention to the original text of the New Testament and to the Greek Classics, as a corrective to the writings of mystical Mediæval philosophers, whose authority had so long been in the ascendant. A return to Roman architectural style naturally came about first in Italy, where Mediæval feudalism had never been firmly established, and where, moreover, city-states had developed municipal freedom and enterprise. The countries of Italy (p. 553), France (p. 620), Germany (p. 650), Belgium and Holland (p. 662), Spain (p. 674), and England (p. 692) were subject to special social influences which affected the character of the architecture.

vi. Historical.—At the beginning of the sixteenth century in Europe the

smaller states were gradually grouped into kingdoms under powerful rulers, who maintained authority by means of large standing armies. Three great inventions contributed to the general upheaval of these changing times. Gunpowder changed the method of warfare. The mariner's compass led to the discovery of the Cape of Good Hope by Diaz (A.D. 1486), and of America by Christopher Columbus (A.D. 1498). When the Turks took Constantinople (A.D. 1453) and conquered Syria and Egypt, the old trade routes between East and West were blocked, but a new route was opened up when Vasco da Gama sailed round the Cape to India (A.D. 1497), and thus started the foundation of colonies by European states. Printing, which appears to have been invented by Koster, of Haarlem (A.D. 1438), and John Fust at Mayence (A.D. 1442), promoted that spirit of inquiry which brought about reformation in religion and revival of learning. Copperplate engraving also came into use towards the end of the fifteenth century, and helped to spread a knowledge of architectural forms. Galileo (A.D. 1564–1642), by astronomical research and scientific discoveries, changed the intellectual perspective of the times, especially by his startling discovery that the earth was not the centre of the universe, but merely a small planet in the solar system. Italy (p. 559), France (p. 627), Germany (p. 650), Belgium and Holland (p. 662), Spain (p. 674), and England (p. 697) were subject to special historical influences which affected the architecture.

2. ARCHITECTURAL CHARACTER

The Renaissance movement, which began in Italy early in the fifteenth century, created a break in the continuous evolution of European architecture which, springing from Roman and proceeding through Early Christian and Romanesque, had, during the Middle Ages, developed into Gothic in each country on national lines. Italy, which was still rich in her ancient Roman monuments, was naturally the pioneer in the Renaissance movement, especially as the Gothic style had never taken firm root in a country which had always clung to her old traditions. Though there was a ready reversion to Classic architectural forms, Gothic methods of construction often prevailed, because Roman methods of building in concrete had fallen into disuse during the Middle Ages. Thus did Classic style and forms triumph once again in spite of the prevalence for centuries of Gothic methods of construction, for which the Romans themselves had prepared the way. The two old systems were pressed into service to produce a style which, though it might be Gothic in construction, was outwardly Classic in character. The salient characteristic of this new departure was the employment of the Classic Roman "Orders" of architecture, which were now reintroduced after having been in abeyance for nearly 1,000 years. These "Orders"—Tuscan, Doric, Ionic, Corinthian, and Composite—which were standardised by Renaissance architects, such as Palladio, Vignola, Scamozzi, and Chambers (p. 757), were used, as by the Romans, both constructively and decoratively. It is a mistake, however, to suppose that mere copyism prevailed, for, although Roman precedent was followed, columns and entablatures appear in novel combinations for use in buildings designed to meet the requirements of the day. Thus was the style evolved which has formed the basis of most modern architecture. Renaissance architecture, instead of being the outcome of traditional methods, followed by the building crafts in general, now became rather the studied product of individual

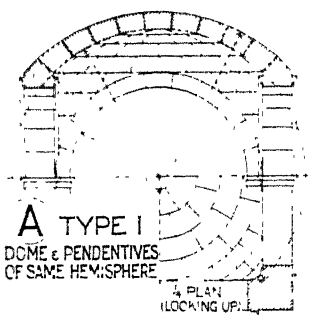


A. Westminster Abbey from S.

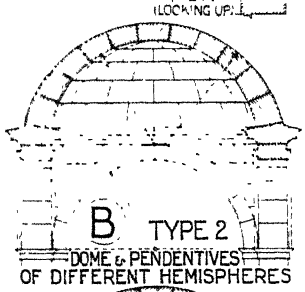


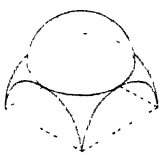
B. S. Paul's Cathedral, London, from S.W.

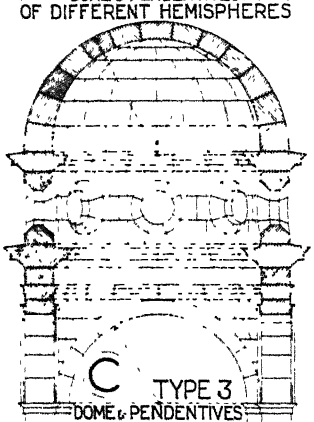
COMPARATIVE DOMES

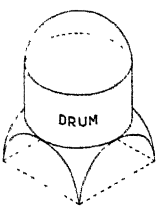


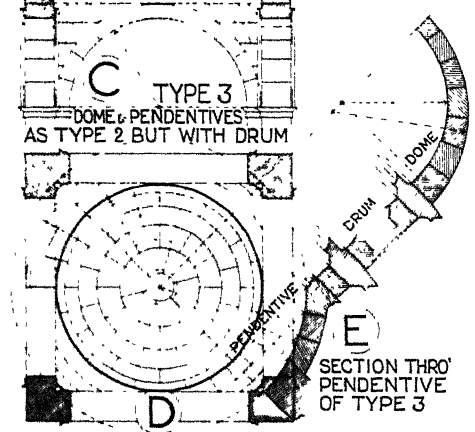


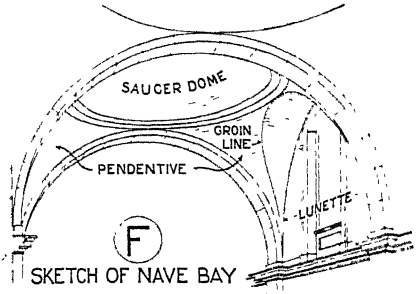


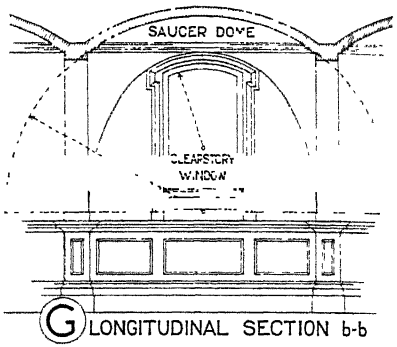


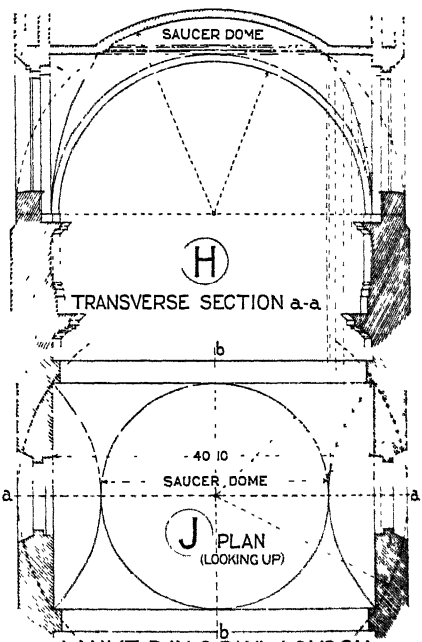












A NAVE BAY: S. PAUL LONDON

architects who with their pupils formed, as it were, schools of design. The biographies of architects, therefore, as given in the works of Quatremère de Quincey, Vasari, and Milizia, are instructive as revealing the surroundings and incidents of their lives, the effect of which is reflected in the buildings. Italy was ripe, as we have seen, for this new phase ; for the arts were in the hands of skilled craftsmen, goldsmiths, and workers in metals, such as Benvenuto Cellini, Ghiberti, Donatello, and Brunelleschi, who looked on architecture as an art of form rather than of construction, and indeed were often, at the same time, painters and sculptors as well as architects. The various schools of painting likewise had their influence, so that buildings came to be treated very much as pictures, largely independent of structural necessity, which had been the controlling element in Mediæval times. Thus, by a reversal of the Mediæval process, architecture became an art of free expression, with beauty of design as the predominant idea. Renaissance architects consciously relied on a studied treatment of wall surface in massive, rusticated masonry as an architectural " motif " as seen in such buildings as the Riccardi (p. 558), the Strozzi (p. 561), and the Pesaro palaces. They also adopted the Byzantine treatment of domes over square compartments, and by increasing the height of the " drum " and decorating it (p. 544), not only with windows, but also with the now inevitable columns, they made the domes external dominating features (pp. 543 B, 577, 590). The pointed arch, which may be regarded as the sign-manual of Gothic architecture, was now ousted by the semicircular Roman arch. Gothic ribbed vaulting, too, which was such a striking feature of Mediæval buildings, now gave place to the ancient Roman semicircular vaults and cross-vaults (p. 303 A). Cross-vaults of unequal span but equal height had the larger vault formed as an ellipse by means of " ordinates," so that the groins followed straight lines on plan (p. 303 D) instead of wavy lines as in the Romanesque period (p. 303 B). This vaulting, which was often formed of timber framing plastered and richly painted, was much used in the halls, corridors, and grand staircases of Renaissance buildings.

The Baroque (Fr., bizarre or fantastic) (p. 862) was a new phase of architectural development, which, in later Renaissance times, was revealed first in Rome and afterwards spread throughout Europe. It has such marked characteristics that we give a general sketch of its genesis and rise, while local characteristics are noticed under each country. It is sometimes called the Rococo style, and arose in the seventeenth century, when the true Renaissance had exhausted its energy and succumbed to the formal rules and monotonous regulations of schoolmen and Classicists, notably Palladio and Vignola, who, however, were themselves greater than the rules they formulated. The Baroque was perhaps chiefly the outcome of reaction against the blind worship of Vitruvius, the Roman architect of the Augustan age, who had laid down rules and whose latter-day sixteenth-century disciples handed out prescriptions for building which killed the vital spark of the true Renaissance spirit. Thus, when the spirit of art which giveth life had died down, schoolmen and Classicists sought to revive it and to bind it on the nation by insisting on the letter of the law which killeth. But the men of the free cities of Italy loved freedom and would not submit to the dead hand in art. The bookish formality in design had tended to reduce architecture to a lifeless product uninspiring in aspect, against which it is not surprising that the beauty-loving Italians should after a time have risen in revolt. They were weary of lifeless conventions, and they rose against the tyranny

of stereotyped rules and standards of proportion. They demanded freedom —freedom in plan, in design, and in ornament. Thus, in the fullness of time the Renaissance style suffered a new change and passed into the Baroque, which at the beginning of the seventeenth century gave expression once again to the human side in architecture, for it was a spontaneous breaking away from orthodoxy in plan, design, and treatment. It is at its best an assertion of freedom, and at its worst a lapse into licence. This spirit of artistic independence was often expressed in sinuous frontages, over-burdened decoration, and apparent disregard of true constructive principles. There was often a straining after originality for its own sake which was apt to detract from the general unity of the design. Other features of the Baroque style consist of columns with twisted shafts, often placed in front of pilasters with cornices broken round them, and surmounted by clumsy curved pediments, huge wavy scrolls, and flying figures in dangerous-looking positions. Baroque interiors were often laden with exaggerated and unsuitable detail of carved ornament emphasised by gilding and accompanied by sculptured figures in contorted attitudes. The Baroque movement, in spite of its many and glaring defects, has perhaps been treated too harshly by critics, who have seized upon its faults without realising its genesis, as a breaking away from a type of architecture which had suppressed any efforts in novelty of design. Many a Baroque building, more especially in Italy, not only exhibits grandeur of general scheme, but also displays new possibilities in the use of ornament.

The Baroque treatment runs through the design and detail of the new villas and gardens of Italy which were built to meet the growing desire for freer life away from narrow streets and frowning prison palaces. The style itself is expressive of the *joie de vivre*, the spirit which inspired the desire for country life in the villas round Rome and in the pleasant Tuscan country. In designing these country residences the architects of the later Renaissance period could throw off the double restraint imposed by city sites and by city life, and the villas, summer-houses, fountains, and terraces bear testimony to the architectural revolt which was abroad in the country. It is perhaps no exaggeration to say that this latest phase of Renaissance was a joyous outburst of art which was mundane in conception, often florid in execution, and always intolerant of restraint. In spite of these characteristics, it was largely adopted for church architecture at this period in Italy, when the Church too was in joyous mood; inasmuch as it had successfully resisted the Reformation movement, and its coffers were enriched from so many sources that it was able to spend large sums on building both churches and palaces. It is nothing short of paradoxical that the Baroque style should have been seized upon by the Jesuits for their own, to such an extent that it became known as the Jesuit style of architecture; yet there is nothing Jesuitical about it, except perhaps that as Jesuits embodied resistance to austerity in religion, so the Baroque style was a revolt against the same qualities in later pedantic Renaissance art. Why should an art of such a nature have been forced to do service for churches, convents, and the cloistered life? The explanation is probably the usual one that applies to architectural style, and that is that it was the style of the time, and as such the Jesuits turned it to their own use and harnessed it vaingloriously to the triumphal car of their Church which they had saved from Reformation attack. As in the Mediæval period all buildings, ecclesiastical and secular, were in the Gothic style, so in this later time all sorts of buildings were

Baroque; also at that period most buildings, religious and secular, owed their origin to the Church, whether churches, convents, palaces, or villas.

The whole Renaissance period, which was conspicuous for the many-sided nature of artists and craftsmen, was by the same token pre-eminently the golden age of accessories, in which tombs and monuments, altars and portals, fonts and fountains, executed in marble or bronze, gold or silver, were designed in accordance with the whim and fancy of master craftsmen, to adorn, not only the new structures, but also those of previous periods.

The general characteristics vary in each country, as will be seen in succeeding chapters.

MODERN ARCHITECTURE

Modern architecture is usually held to include the nineteenth century and afterwards, and in each country, as will be seen, revivals of past styles took place, while the traditional Renaissance architecture was still used with variations due to novel requirements.

3. EXAMPLES

Characteristic Renaissance buildings, ecclesiastical, municipal, commercial, and domestic, are described in detail under each country, viz.: Italy (p. 566), France (p. 631), Germany (p. 652), Belgium and Holland (p. 664), Spain (p. 678), and England (p. 708).

4. COMPARATIVE ANALYSIS

The following table gives the main differences between the Gothic and Renaissance styles in Europe:

GOTHIC	RENAISSANCE
A. **Plans.**—Plans were largely the fortuitous result of the various necessary parts arranged for convenience rather than for symmetry (p. 365 E, L).	A. **Plans.**—Plans were arranged with special regard to symmetry, produced by similarity of parts on either side of central axial lines (pp. 557 C, 562 C).
Interiors were planned in oblong bays covered with rib and panel vaulting (p. 346 B) or with open timber roofs (p. 363).	Interiors were planned in square bays (p. 589) covered with barrel or cross vaults and with a central dome (p. 589 G).
Naves are divided into numerous bays, and this repetition gives an appearance of length, as in Winchester Cathedral, which with a length of 270 ft. has 12 divisions (p. 332 C). Grandeur was thus produced by the large number of parts into which the building was divided.	Naves are divided into few bays, and thus an appearance of spaciousness is obtained, as in S. Paul, London, which with a length of 160 ft. has only 4 divisions (p. 718). Grandeur was here obtained by the small number of large divisions or parts employed (p. 721).
Towers, often crowned with spires, are freely used and are predominant features which accentuate the verticality of the design. They occur as single western towers, towers over the crossing, twin western towers, and even in groups of nine, as was contemplated at Chartres (p. 442 A).	Towers are sparingly used, and when they occur are symmetrically placed, whether in pairs, as at S. Paul, London (p. 723), or as a single western tower, as at S. Bride, where it is crowned by a spire (p. 732). The dome is a predominant feature externally (p. 604 A).

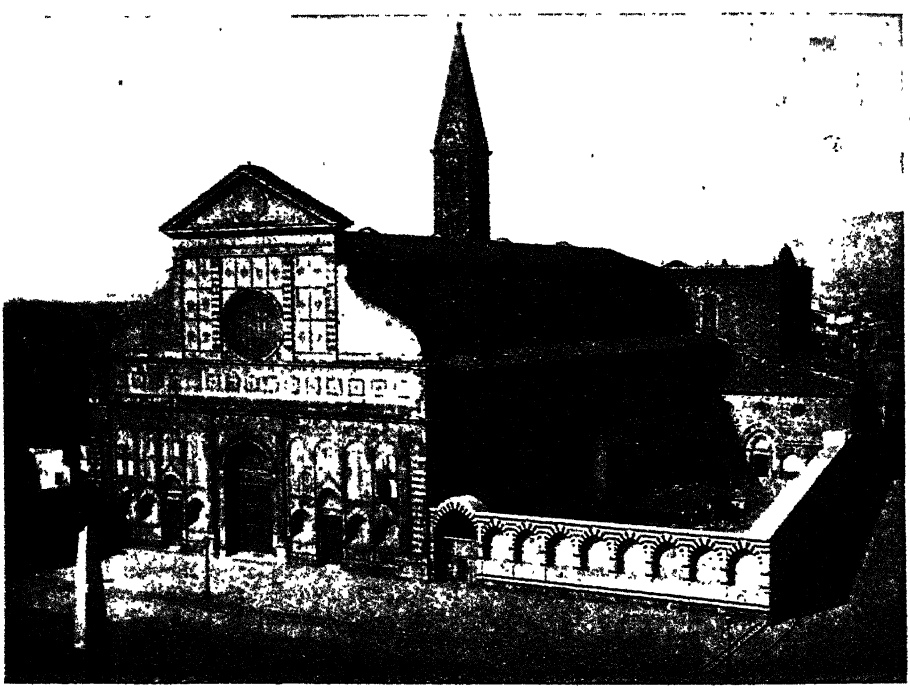
GOTHIC	RENAISSANCE
B. **Walls.**—Walls are often constructed of rubble masonry (pp. 402–404) not laid in horizontal courses, or of brick and rough flint in patterns. In accordance with Mediæval usage materials were in small pieces, even when of squared stones or ashlar, fitted together to meet the requirements of a style in which church walls were practically replaced by glass windows and projecting buttresses.	B. **Walls.**—Walls are constructed of ashlar masonry, accurately laid in horizontal courses, or of brick lined up with bonding courses. In accordance with Roman practice, materials were in large blocks, which give dignity, often accentuated by rusticating the blocks in the lower part of walls, which were only pierced at intervals with windows (p. 558).
Wall angles are often of squared ashlar masonry, while the rest of the walling is of rubble, flint, or brick.	Wall angles are often rusticated to give an additional appearance of strength (p. 568 B).
Gables are steep, pierced with windows and finished either with stone parapets (p. 346 A) or ornamented timber bargeboards (p. 375 B).	Pediments are of low pitch (p. 598 A), due to Classic influence, or semicircular (p. 595 A), sometimes filled with sculpture.
Skylines are characterised by rising towers and the intricacy resulting from numerous pinnacles (pp. 281, 496).	Skylines are characterised by horizontal cornices and balustrades, which give simplicity of outline (pp. 568 A, 578 B).
C. **Openings.**—Arcades of pointed arches are characteristic, as in Westminster Abbey (p. 357 A), and in cloisters are frequently filled with tracery, as in Westminster Abbey (p. 354 A).	C. **Openings.**—Arcades of semicircular arches appear in courtyards and street architecture, especially in Italy (p. 567 B).
Door (pp. 407, 441 B) and window openings (p. 408) have their sides or jambs in recessed planes, richly moulded and often provided with small nook-shafts (p. 267 B). Openings were placed with regard to convenience rather than to symmetry or position one over another, and were usually spanned by pointed arches (pp. 370 A, 455 H).	Door and window openings have their sides or jambs unrecessed and finished with a moulded architrave of Classic type (p. 267 A). Openings were placed with regard to symmetry and to grouping one above the other, and were spanned by semicircular arches (p. 568 A) or lintels (p. 568 B).
Windows are divided by vertical mullions and horizontal transoms, and are often of enormous size for the display of painted glass—a translucent form of decoration which influenced the number and size of the windows (p. 408).	Windows, except under transition conditions, followed Classic lines and remained small as determined by the climate of Italy, and were unbroken by mullions and transoms (p. 568 B) and not used as frames for painted glass pictures.
D. **Roofs.**—Vaulting was developed by means of the pointed arch and depends for effect on the beauty of curve of the numerous ribs which support the panels and which are frequently enriched at their junctions by carved "bosses" (p. 324).	D. **Roofs.**—Vaulting was characterised by semicircular vaults without ribs (p. 578 E), and depends for effect on coloured frescoes; the dome (pp. 544, 555 A), whether of the flat saucer type or raised on a drum, is also frescoed (p. 556 G).
Open timber roofs are beautiful features of the style, especially in England, both in royal palaces, such as Westminster Hall (p. 409), and in parish churches (p. 363).	Timber roofs are no longer left open, but are frequently lined internally with plaster ceilings, horizontal or arched, and enriched with plastic decoration (pp. 693, 694, 741 C, 746 C, E, 761 A, B).

GOTHIC	RENAISSANCE
The external treatment of roofs varies in ecclesiastical and domestic buildings, but is characterised in general by towers and spires (p. 437 B), high gables, elaborate chimneys (p. 372 A), ornamental parapets (p. 416), lofty pinnacles, and slender flèches (p. 462), which give a jagged and spiky skyline.	The external treatment of roofs varies in each country; in Italy they are flat and hidden behind balustrades (p. 592 D), while in England, Germany, and especially France they are high; the dome is the dominating feature and gives a smooth and rounded outline (p. 543 B).
E. **Columns.**—Columns were used structurally; the Classical proportions between height and diameter were not observed; capitals and bases were moulded and carved according to the fancy of the craftsman. Piers combined with shafts were frequently used instead of cylindrical piers, and their plan was determined by the moulded arches and vaulting ribs they had to support (pp. 410, 450 B, 451 A).	E. **Columns.**—The Classic "Orders" were again used and their proportions standardised (p. 757), and they appear either decoratively in façades (pp. 562 A, 567 A) or structurally, as in porticoes (p. 570 B). Shafts were varied by rustication, fluting, and carved foliage. When the column had to perform the novel function of supporting an arch it was frequently surmounted by an entablature block (p. 605 A).
F. **Mouldings.**—The contours of mouldings consist of curves forming parts of circles or combinations of these curves joined by fillets, which enriched the sides of openings and were contained within rectangular recesses or on a "chamfer plane" (p. 414) at an angle of 45 degrees with the wall-face.	F. **Mouldings.**—The contours of mouldings consist of curves formed of parts of circles joined by fillets, as in Roman entablatures (pp. 119, 120, 147), but were now used in novel combinations; while the sides of openings have simple architrave mouldings formed on the wall surface (pp. 567 E, 605, 607 C).
Mouldings, when used as horizontal string courses, are sometimes enriched with carved ornament varying in character according to the period (p. 415).	Mouldings, when used in intermediate cornices, are Roman in character and, when carved, the ornament is derived from the same source (pp. 606, 611, 612).
Projecting vertical buttresses, emphasised by their deep shadows, lofty moulded pinnacles, together with steep roofs, towers, and spires, all produce an effect of verticality (pp. 438 C, 446, 543 A), while parapets, battlemented or pierced with tracery, take the place of boldly projecting Classic cornices (pp. 416, 456, 461).	Projecting horizontal cornices casting deep shadows, with balconies and moulded string bands, all combine to produce an effect of horizontality, while effective crowning cornices, to which were often added balustrades, play an important part in continuing the old Classic style (pp. 558 B, 584 A, B, 592, 596 A, 597).
G. **Ornament.**—Ornament generally was founded on Mediæval mysticism and Christian subjects.	G. **Ornament.**—Ornament generally was founded on Classical mythology and pagan subjects.
Carving, often boldly executed and grotesque, possesses a decorative character in harmony with the architecture, and enriches doorways, windows, buttresses, pinnacles, and gargoyles (pp. 421, 465). Sturdy craftsmanship characterises the style, not only in stone, but also in metal and woodwork, and was determined by structural forms rather than by individual taste (pp. 424, 427).	Carving is generally carefully executed and has a character in harmony with Classic ideals and precedent, whether in cornices, consoles, capitals, friezes, pilaster shafts, or pediments (pp. 605, 606, 608, 611). Fine craftsmanship is distinctive of the Early Renaissance period, as seen in the metalwork of individual artists, such as Ghiberti, and in the glazed faience of the Della Robbia family (p. 560).

GOTHIC	RENAISSANCE
The human figure determined the scale, both for statues and for doorways. The statues spring from and form part of the structural features of the buildings and are thus architectonic in character (pp. 446, 465).	The human figure was not the unit of scale, either for statues or for doorways, both of which increased with the size of the building. Statues, anatomically correct, are not an integral part of the structure (pp. 543 B, 564, 590, 596 A, 597, 602 H, 723).
Stained glass is the coloured glory of the style and was largely the *raison d'être* of the immense traceried windows which framed the glowing pictures of Bible incident and church history (p. 306), and it culminated in the translucent coloured windows of Rheims.	Fresco painting gives the coloured mural decoration of the style in which windows were subordinate, and it was handed down from the Roman period and attained the height of its glory in the pictured symbolism on the walls of the Sistine Chapel.
External colour schemes were usually the result of the combination of the materials used, as in Florence (p. 513 A) and Siena Cathedrals (p. 514 A).	External colour effects were usually produced by "sgraffito" decoration on coloured plaster, as in the Palazzo del Consiglio, Verona (p. 602 H).

5. REFERENCE BOOKS

The principal reference books are given under each country: Italy (p. 614), France (p. 647), Germany (p. 660), Belgium and Holland (p. 672), Spain (p. 688), and England (p. 759).



S. Maria Novella, Florence



ITALY IN THE 16TH CENTURY

ITALIAN RENAISSANCE

(See p. 251 for Italian Romanesque, and p. 497 for Italian Gothic. A general introduction to Renaissance architecture in Europe is given (p. 540).)

1. INFLUENCES

i. Geographical.

The Renaissance in Italy is best considered geographically under the three great distinctive cities of its activity, Florence, Rome, and Venice, which are here taken as centres rather than as schools.

Florence.—The city-state of Florence, centrally situated, was one of the chief powers of Italy. Though its dominions included a comparatively small part of the peninsula, the Florentines exerted considerable influence on surrounding districts during the Renaissance period, as they previously had in the Romanesque and Gothic periods (pp. 251, 497), and now, as then, geographical influence was a stable factor. Under Florence are included Genoa and also Milan, where the Florentine Bramante, who had studied in Rome, first practised his art ; an instance of the counter and reflex influences at work at this time.

Rome.—The unique influence of Rome at this period was due, as always, to its central position and its prestige as the capital of an empire that had indeed crumbled away, but whose architecture was now being revived by popes and cardinals. The ruins of ancient Rome, then better preserved than now, supplied the models for new buildings which, in their turn, became models for all Europe. Under Rome is taken the surrounding district, though her influence is visible everywhere.

Venice.—The greatness of Venice was founded during the Mediæval period (pp. 251, 497) on her Oriental commerce, due to geographical position, and this prosperity lasted well into Renaissance times. The history of the Venetian State was always influenced by her isolated position on the Adriatic Sea, which gave her the island frontier of the Lido, secured her against attack from the mainland and made her the sea-power of the Adriatic with direct maritime connection with the trade of the East, until geographical discoveries opened up new routes and thus modified her importance as a trading port.

> " Underneath day's azure eyes,
> Ocean's nursling, Venice lies."

Under Venice are included such connecting links with Milan along the valley of the Po as the cities of Vicenza, Verona, Brescia, and Bergamo.

ii. Geological.

Florence.—The quarries of Tuscany were as ungrudging in their supplies of large blocks of stone and marble as in previous periods (pp. 252, 498), and these give a massive and monumental character to the architecture, especially of the palaces of the nobles and of the princes of the Church.

Rome.—The ruined buildings of pagan Rome, such as the Colosseum, Pantheon, Thermæ, Forum, and Colonnades, were quarries from which material could be easily collected for Renaissance buildings, besides which there was an inexhaustible supply of that local travertine stone and marble from the mountains which had influenced previous styles (pp. 130, 199, 252).

Venice.—Although the floating city of Venice could produce no building materials, yet by easy water-carriage she could gather together stone, marble, brick, and wood, according to her needs, as we have seen in the Mediæval period (pp. 252, 498).

iii. Climatic.

Florence.—The bright and sunny climate rendered large windows not only unnecessary, but also unsuitable, and this is well indicated by Tennyson :

> " In bright vignettes, and each complete,
> Of tower or duomo sunny-sweet,
> Or palace, how the city glittered
> Through cypress avenues, at our feet."

The open " cortile " and the sheltering colonnade are both, as in ancient times, the result of the warm climate ; while the low-pitched roof, natural in a country where snow was rare, lent itself to cornice and balustrade.

Rome.—Though religious, social, and historical influences changed with the centuries, the climate of Rome exercised the same influence in Renaissance as in ancient and Mediæval times (pp. 130, 252, 498).

Venice.—The climate, as seen in previous periods (pp. 252, 498), has the extreme heat of summer tempered by sea breezes, and this favours outdoor life, so that belvederes and balconies are usual and were all the more necessary in the absence of gardens, occasioned by the restricted character of the island sites. On the other hand, owing to its northern latitude and the winds that sweep down from the snow mountains, chimneys are more necessary than in many Italian cities, and here have a character of their own.

iv. Religious.

Florence.—The great Dominican preacher, Savonarola (A.D. 1452–98), arose as a power in Florence in the fifteenth century, and by his ardent piety and reforming zeal he changed the habits of the citizens, swayed the policy of the State, and even menaced the authority of the supreme Pontiff. Saint, preacher, reformer, martyr, his terrific denunciations of corruption in Church and State, his eloquent exhortations to purity of life, his personal devotion and singleness of purpose spread consternation in the pleasure-loving city of Florence, roused the citizens from indolence and indifference, dealt a death-blow at the unbridled tyranny of the Medici, and called upon the rulers of Christendom to summon a general council to reform church abuses. At one time banished from Florence by a Medici, at another excommunicated by a pope, and yet again forsaken by his own people, Savonarola, in spite of all, became the saviour, lawgiver, and dictator of the Florentine Republic; his influence lived on after his death, and is even evidenced in the frescoes by Michelangelo in the Sistine Chapel.

Rome.—The return of the popes (A.D. 1377) from Avignon to Rome had helped to re-establish her former position of importance and prosperity. From the time of the Council of Constance (A.D. 1417), the popes, notably Nicholas V (A.D. 1447–55) and Leo X (A.D. 1503–22), took a prominent position as Italian princes and patrons of art and also greatly extended their temporal dominions in Italy. There were people who then looked for the consolidation of Italian unity under the papal sway, and Cæsar Borgia, nephew of Pope Alexander VI, proposed to effect this by absorbing the Italian states as one would eat an artichoke—leaf by leaf. Julius II (A.D. 1503–13), with sword in one hand and crozier in the other, sought to accomplish this end by force, and his pontificate was a record of politico-religious strife. Thus do we see the impossibility of unravelling into separate threads the warp of religious and social conditions of this restless period, when princes of the Church vied with one another in building magnificent palaces. The Jesuits, founded by the Spaniard, Ignatius Loyola, in A.D. 1539, to combat the effects of the Reformation and to strengthen the papal power, built preaching churches and religious colleges, and were not only religious enthusiasts, but also a great building confraternity, and their name became associated with the late Renaissance style, which is more properly called Baroque (p. 545).

Venice.—In the days of the growing temporal power of the papacy, the freedom-loving Venetians, loyal before all things to their sea-born city, maintained a semi-independence of the pope at Rome, and this was specially manifested during the attempted Interdict (A.D. 1607) of Paul V, when the learned theologian Paolo Sarpi (A.D. 1552–1623) was the adviser of the Venetian State. A people capable of such independent action naturally showed it in the variety and style of their architecture, while their commercial connection with Constantinople inclined them to religious tolerance, as is shown in the erection of a Greek church, an interesting example of local Renaissance.

v. Social.

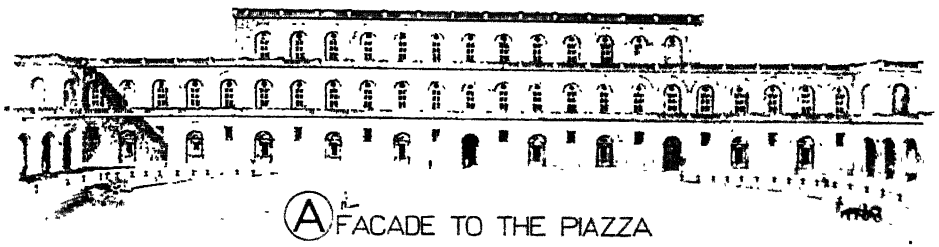
Florence.—The rediscovery of Classical literature produced a wave of enthusiasm throughout Italy for old Roman architecture. This new movement began in Florence under the Medici family, founded A.D. 1424 by Giovanni de' Medici (d. A.D. 1429), which gradually assumed supreme authority in the State. His son, Cosimo the Elder (d. A.D. 1464), founded

the Medici Library and Platonic Academy, and was the patron of artists, such as Brunelleschi, Donatello, Michelozzo, Lippi, and Masaccio. Under Pietro and Lorenzo de' Medici, Florence, " the Athens of the Renaissance," became the centre of the revival in literature and art. In A.D. 1471 a printing press was set up there, from which were issued the " Bucolics," " Georgics," and " Æneid " of Virgil. In Florentine social life the craft guilds had played a prominent part, and indeed from them had sprung the great Medici family, which had such a controlling influence during the whole of this period, and that too in spite of blots on their family scutcheon and in spite of habits of extreme luxury and even of vice. The Uffizi Palace and the Villa Medici are two architectural evidences of the greatness of this ruling family and of their patronage of art. The golden florin had first been coined at Florence in A.D. 1252, and it is indicative of the commercial prosperity and predominance of that city that this coin had become the general standard of value in Europe. Thus Florence was a leader among cities in art, literature, and commerce, and took her share in the military conflicts of the time, while internally the city was rent by continuous feuds of rival parties, and this condition of unrest is reflected in the semi-fortified character of the palaces. The powerful and well-organised craft guilds had a considerable share in directing the activities of studio and workshop which, inspired by the Renaissance movement, sprang up in every Florentine street, and the daily routine of the Florentine craftsmen has been well described in " The Fine Arts " by Baldwin Brown. In all the little centres of creative art, whether artists' studios or goldsmiths' shops, men of all crafts began to design in the new style, the charm of which lay not in imitation, but in new and delightful combinations of old Roman " motifs."

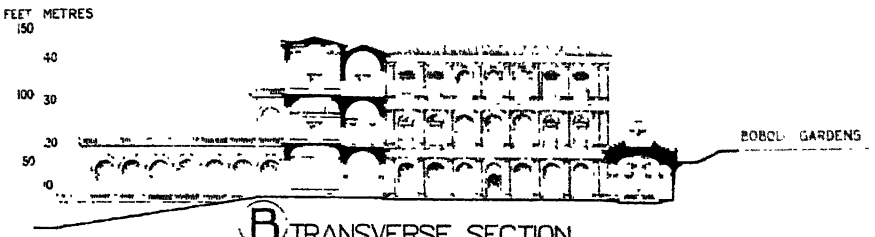
Rome.—In Rome the government checked party strife, and defensive palaces were not as necessary as in Florence. Rome was also the home of old Classic traditions which naturally exerted great influence over any new developments. During the fifteenth century, when the popes became strong temporal rulers, many great families returned to Rome ; splendid new palaces and churches were erected and were embellished by eminent painters, such as Peruzzi, Raphael, and Michelangelo. A school sprang up for artists and craftsmen who gradually spread the Renaissance style throughout Italy and Europe. Printing presses were set up about A.D. 1465, and in A.D. 1515 an edition of Pindar was printed in Rome at the press of the banker, Agostino Chigi, and this opened up a wider access to the study of ancient writers.

Venice.—During the whole of the fifteenth century Venice was engaged in conquering neighbouring towns, over which Venetian nobles were appointed as governors. The republican government of Venice gave special care to regulations for the development of trade, both in home and overseas markets. Her prosperity was due to a state commercial system, and was not the result of mere accident or of the enterprise of individuals. This successful trading community produced many kings of commerce, whose rivalry in display led to the erection of the many fine palaces on the Grand Canal, which were not fortresses as at Florence, but residences of peaceable citizens and merchant princes. John of Spires established (A.D. 1466) the first of those printing presses for which Venice became so famous when, at a later time, the Aldine Press issued its editions of the Greek Classics. Thus during those years of the Classic revival in Venice her artists, craftsmen, and printers were all busy with brush, chisel, and type in giving new forms to old ideas and new life to ancient literature.

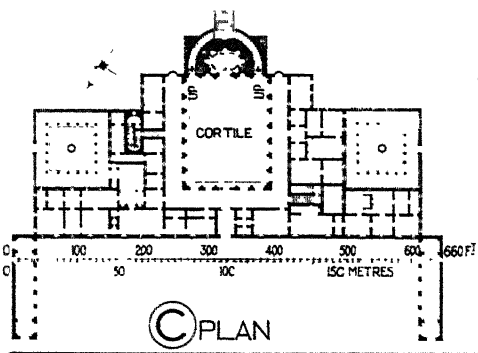
PALAZZO PITTI: FLORENCE



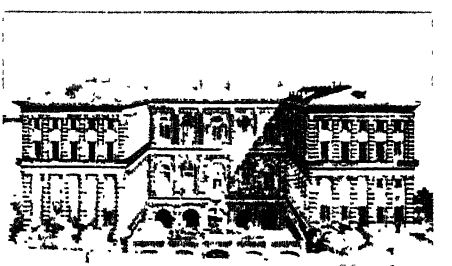
A FACADE TO THE PIAZZA



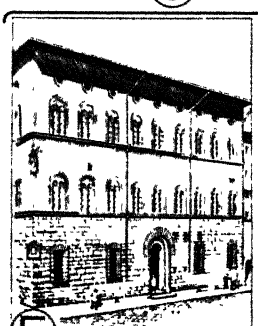
B TRANSVERSE SECTION



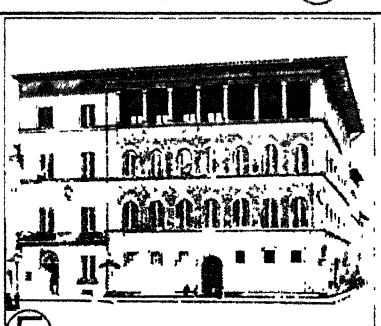
C PLAN



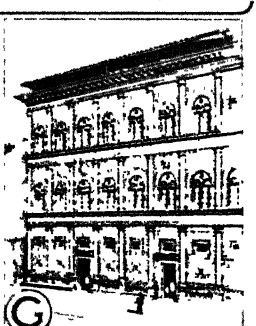
D GARDEN FACADE



E Pº QUARATESI: FLORENCE



F PAL. GUADAGNI: FLORENCE



G PAL. RUCELLAI: FLORENCE

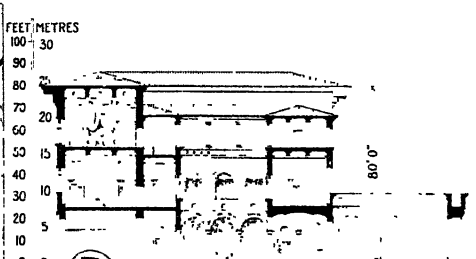
PALAZZO RICCARDI : FLORENCE



B EXTERIOR



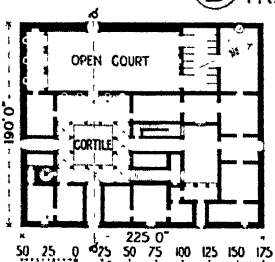
C CORTILE



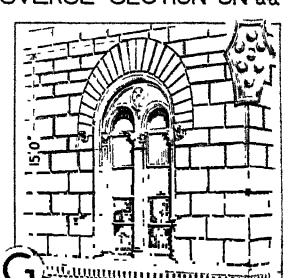
D TRANSVERSE SECTION ON a-a



E GRD FLOOR WINDOW

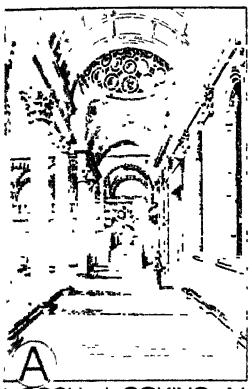


F PLAN

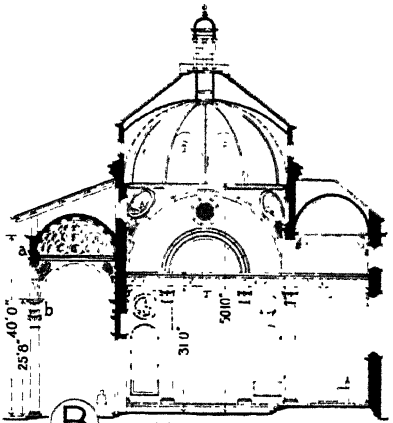


G FIRST FLOOR WINDOW

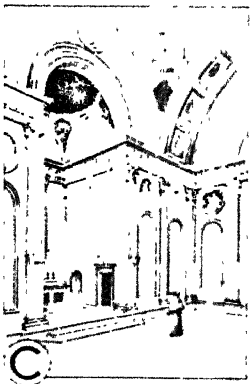
PAZZI CHAPEL: FLORENCE



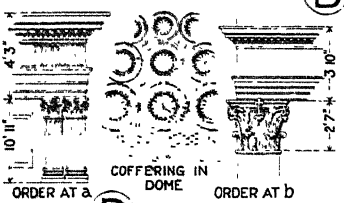
A LOGGIA LOOKING N.



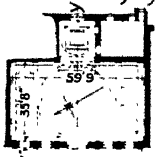
B SECTION y-y



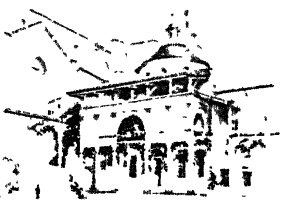
C INTERIOR SHOWING ALTAR



D DETAILS

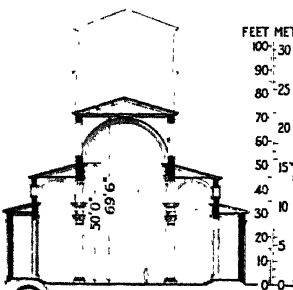


E PLAN

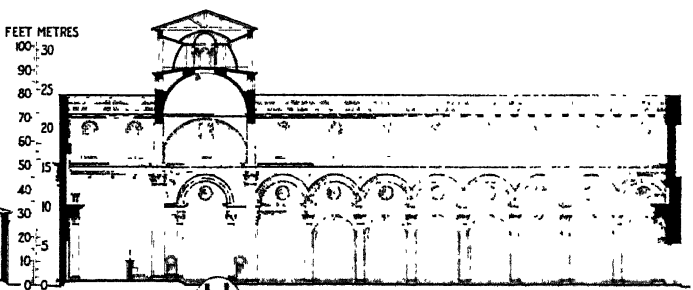


F EXTERIOR FROM CLOISTERS

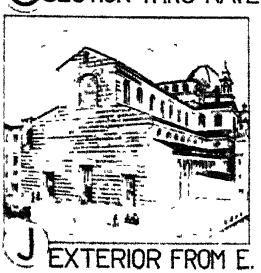
S. LORENZO: FLORENCE



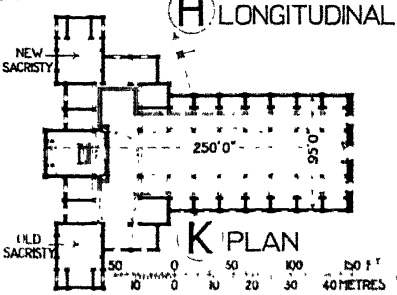
G SECTION THRO' NAVE



H LONGITUDINAL SECTION



J EXTERIOR FROM E.



K PLAN

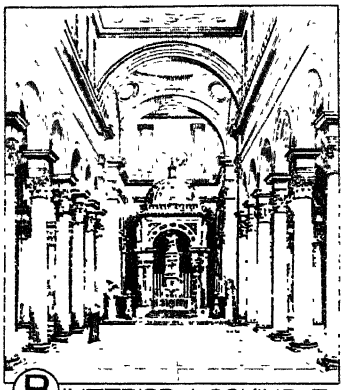


L INTERIOR LOOKING W.

S. SPIRITO : FLORENCE



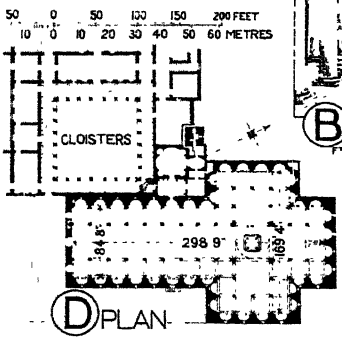
A EXTERIOR FROM S.W

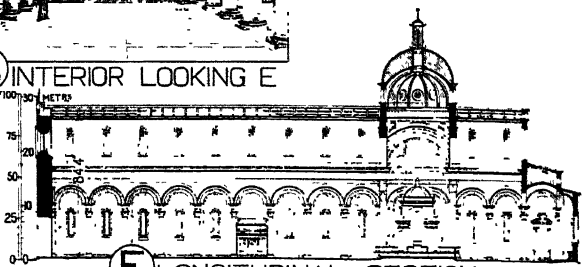


B INTERIOR LOOKING E



C TRANSVERSE SECTION

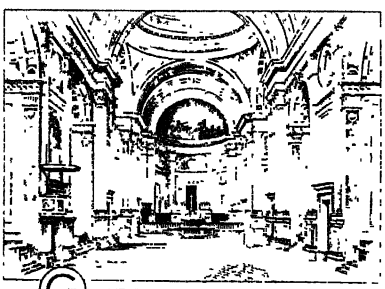




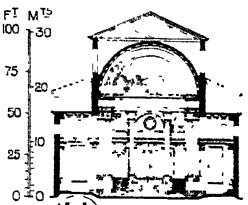
S. ANDREA : MANTUA

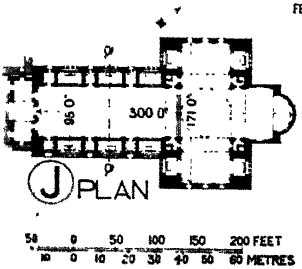


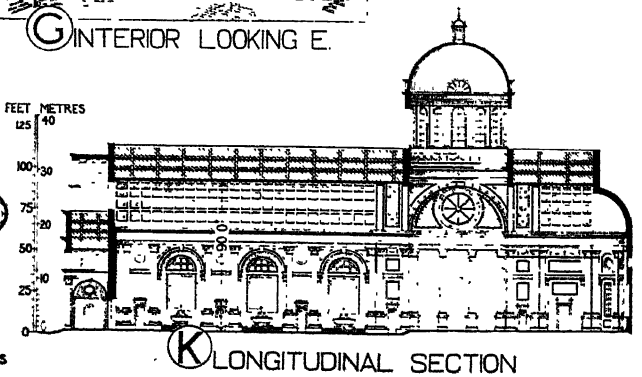
F EXTERIOR FROM S.W



G INTERIOR LOOKING E.







vi. Historical.

Florence.—The grouping together of independent commonwealths in Italy is a feature of this period when, as in ancient Greece, one city bore rule over another. In A.D. 1406 Florence conquered Pisa and thus obtained a seaport, and in A.D. 1421 she took Leghorn from the Genoese and was strong enough to challenge Milan and Lucca in war, and so became the chief power in Italy and the art centre of Europe. The feuds between nobles were aggravated by the warfare between the Guelphs and Ghibellines (pp. 253, 498). In A.D. 1494 Charles VIII of France occupied Florence during his brief invasion of Italy to enforce his claims to the kingdom of Naples. The short-lived republic of Savonarola followed, but the Medici, in spite of successive banishments, were reinstated by the Emperor Charles V when he took the town in A.D. 1530, after a siege of eleven months, during which Michelangelo acted as engineer to the republic. Political liberty was subsequently curtailed, especially under Cosimo I (A.D. 1537–74), who, however, greatly extended the Florentine dominions and obtained Siena from the Emperor Charles V in A.D. 1557. The Grand Dukes of Tuscany passed through varying fortunes until, in A.D. 1737, the House of Medici became extinct and the Duchy passed to Austria. In A.D. 1801 Florence again attained political freedom as a republic and afterwards as the Kingdom of Etruria. Between A.D. 1807 and 1814 she was incorporated with France, and in A.D. 1860 she was united to the Kingdom of Italy.

Rome.—The Council of Constance, which followed the return of the popes after their long sojourn in Avignon, put an end not only to the scandal of rival popes, but also to the factions of the barons within the papal city ; so that times of more stable government and greater security resulted in an increase of wealth and prestige and a revival of building in Rome. That ambitious Pope, Julius II, besides extending the temporal power of the papacy, sought to aggrandise himself in the popular imagination, and thus his original intention of erecting a monumental tomb house for himself developed into the gigantic scheme for the rebuilding of S. Peter's, as the greatest cathedral in Christendom (p. 582). For the seventh and last time Rome was taken and plundered by the Emperor Charles V (A.D. 1527). One external power after another then exercised authority in Italy, and so modified the natural tendency of Italian architecture. First came Charles V and the influence of Spain which, with her dignified state ceremonials, was responsible for the introduction of extravagant ornament. This was followed by the French ideas of the magnificent times of Louis XIV. Then the Italian peninsula passed largely under the yoke of Austria ; until the national sentiment, though checked and thwarted in A.D. 1848, culminated in the formation of the new Kingdom of Italy (A.D. 1870), when Rome, though still the stronghold of the papacy, became the capital city of united Italy.

Venice.—In the middle of the fifteenth century, when Constantinople was taken by the Turks (A.D. 1453), the supremacy of Venice, which had been her commercial ally, was undermined ; while the discovery by Diaz in A.D. 1486 of the new route round the Cape to India diverted her commerce to the Portuguese. During the sixteenth and seventeenth centuries the Venetians were at constant war with the Turks, and eventually in A.D. 1715 Venice lost the whole of her possessions, except those in north Italy ; but even when her territorial power was reduced and her commerce diverted, the mighty sea-republic still cherished the arts and crafts which had been the first-fruits of her prosperity.

2. ARCHITECTURAL CHARACTER

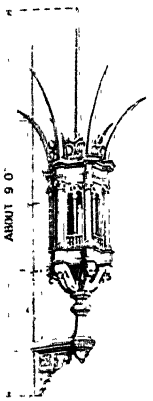
The Renaissance in Italy may be divided broadly into three periods, viz. : Early (fifteenth century), Middle (sixteenth century), and Late (seventeenth and eighteenth century), and may be considered under the three great distinctive cities. Modern Architecture is referred to on p. 609.

FLORENCE

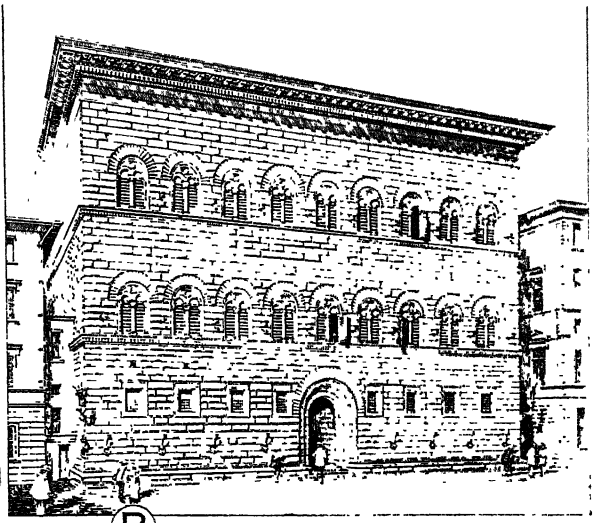
The Renaissance of the fifteenth century in Italy had its birth in Florence, where, under unique conditions and influences, a type of palace-building was evolved, to which huge blocks of rusticated masonry give an unusually massive and rugged appearance. The typical palace was built round an internal court, similar to a Roman atrium (p. 184 A, C, D) or a Mediæval cloister, surrounded by an arcade supporting the walls of the upper storeys (pp. 558 C, 562 D). There is a general absence of pilasters as decorative features in the façades, which are therefore called " astylar " ; while sparing use of detail, together with concentration on pronounced features, produces boldness and simplicity of style. The imposing appearance of these massive palaces fronting on narrow streets is emphasised by boldly projecting roof cornices, which crown the walls and are proportioned to the height of the buildings, as in the Palazzo Riccardi (p. 558 A, B). The columnar arcade is naturally a favourite feature, not only in courtyards, but also in streets, as in the Ospedale degli Innocenti and the Loggia S. Paolo. Early Renaissance churches are conspicuous for refinement, in strong contrast to the rugged, fortress-like character of the palaces. The architectural character owes much of its interest to the individual fancy of sculptors and painters. Among others there were Luca della Robbia (A.D. 1400–82), famous for his coloured glazed reliefs in terra-cotta, Lorenzo Ghiberti (A.D. 1378–1455), who designed the Baptistery doors (p. 566), and also Donatello (A.D. 1386–1466), Mino da Fiesole (A.D. 1431–84), and Benedetto da Majano (A.D. 1442–97), renowned for their bas-reliefs, carvings, and statues. Thus, with this wealth of genius, it is natural that altars and monuments, fonts and pulpits should be richly decorated with sculptured ornament. Florentine craftsmanship, whether displayed in capitals, consoles, corbels, arabesques, fountains, niches, or torch brackets, shows highly developed artistic perception and technical skill (pp. 605, 606). Not only does ornament depend upon the personality of the artist, but architectural design also now becomes the product of the individual architect rather than of a school of craftsmen working on traditional lines. The examples which follow will therefore be classified and considered under the names of the different architects ; but it is typical of those spacious days in art and of the new spirit of emulation that architect, sculptor, and painter should often have been one and the same person, and examples of this combination are found in the versatile Leonardo da Vinci, the mighty Michelangelo, and the gentle Raphael.

The Baroque, a later outbreak of the Renaissance style (p. 545), obtained little real foothold in Florence, the birth-city of the Renaissance ; for she was well stocked with grand churches and noble palaces in the style which was peculiarly her own. Inside Florence there are gardens, such as the Boboli, which are Baroque in style ; outside the City of the Lily, in the smiling Tuscan plains, there was more scope for the exercise of the architecture of the curved line. Florentines sought for freedom of living and for

PALAZZO STROZZI: FLORENCE



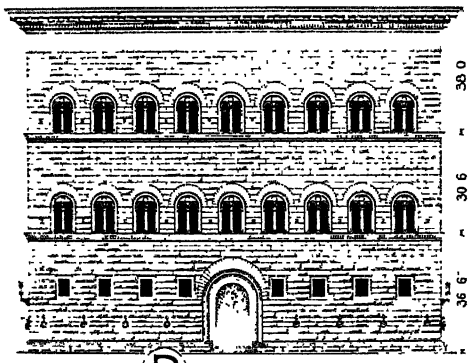
A ANGLE LANTERN



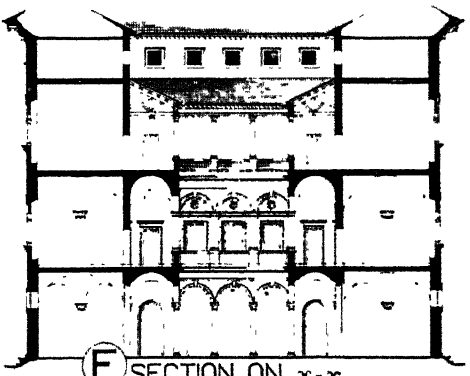
B EXTERIOR FROM PIAZZA



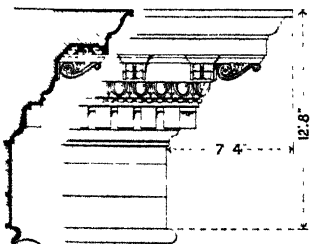
C LINK HOLDER



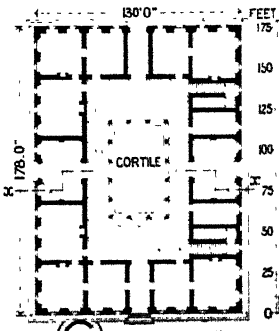
D ELEVATION



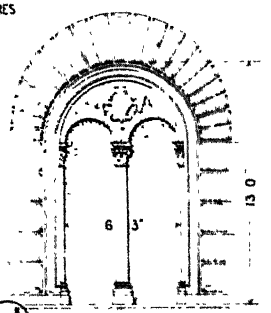
E SECTION ON xc-xc



F CROWNING CORNICE

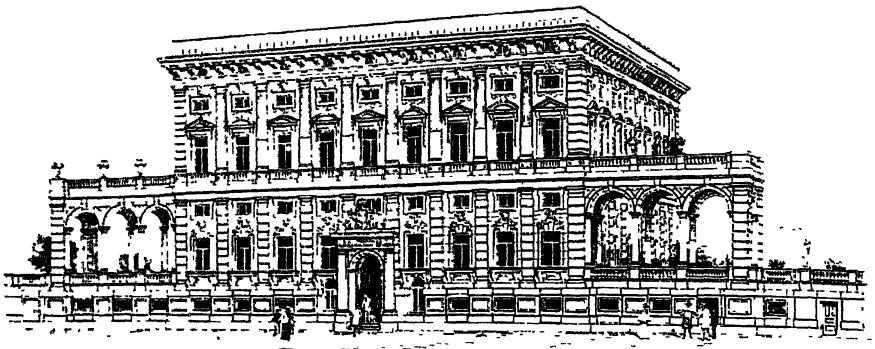


G PLAN

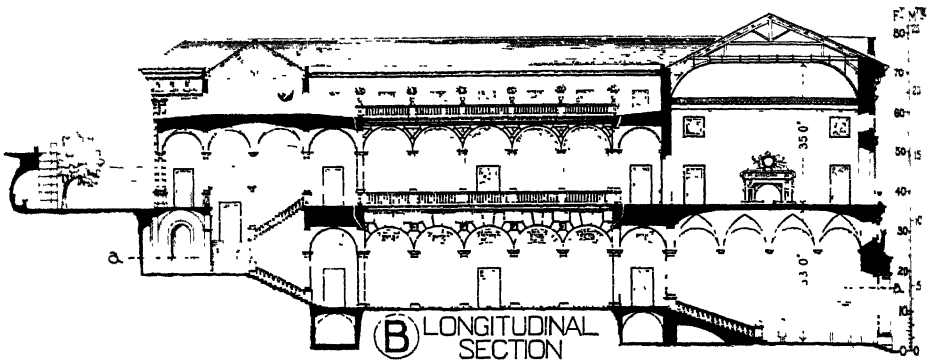


H FIRST FLOOR WINDOW

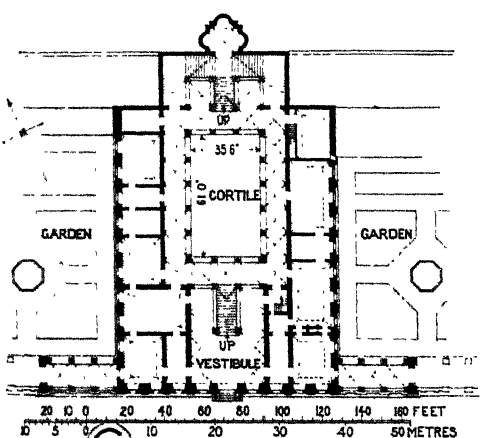
PALAZZO MUNICIPIO : GENOA



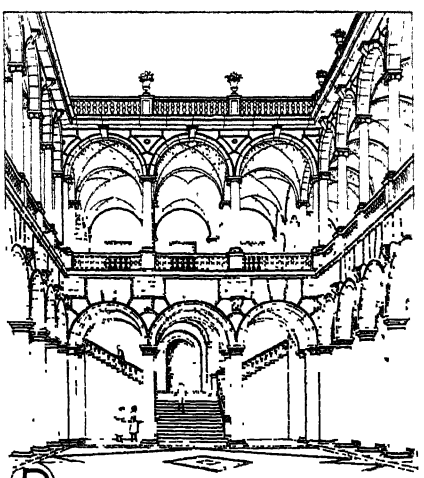
A ENTRANCE FACADE



B LONGITUDINAL SECTION

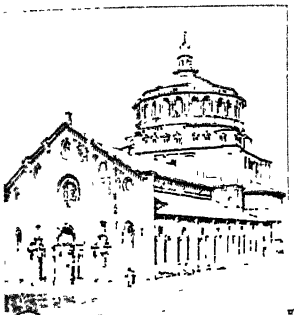


C PLAN AT LEVEL a-a

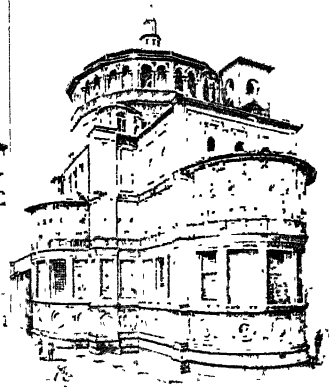


D CORTILE & GRAND STAIRCASE

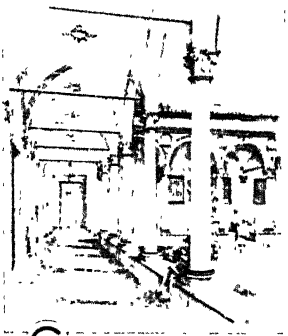
S. MARIA DELLE GRAZIE, MILAN



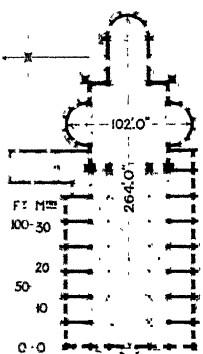
A EXTERIOR FROM S.W.



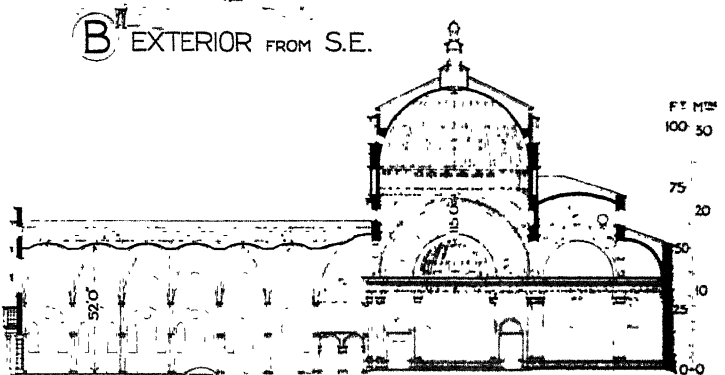
B EXTERIOR FROM S.E.



C THE CLOISTERS

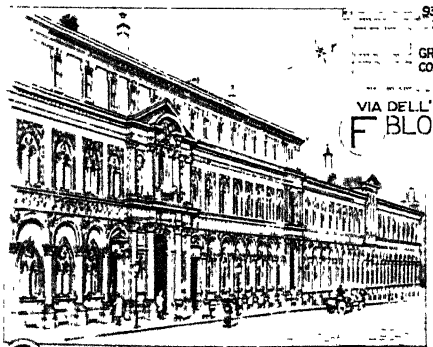


D PLAN

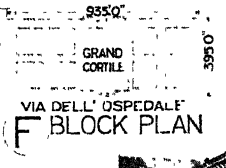


E LONGITUDINAL SECTION

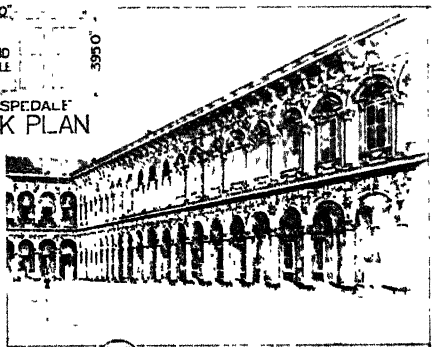
THE OSPEDALE MAGGIORE: MILAN



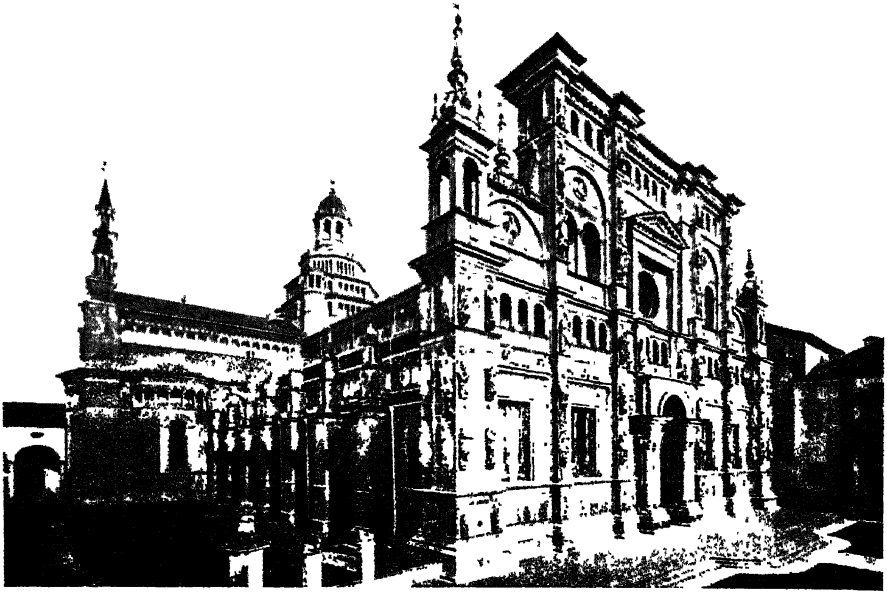
G EXTERIOR FROM VIA DELL' OSPEDALE



F BLOCK PLAN



H GRAND CORTILE



A. The Certosa, Pavia



B. The Scuola di S. Marco, Venice

wider spaces outside their city of fortress-palaces, and so in the Tuscan villas we shall not fail to see the free Baroque spirit at work.

In Genoa the Baroque style is seen in those great portals along the street of palaces ; also internally in the daring treatment of the grand staircases, which are so ingeniously adapted to make imposing approaches to the " piano nobile " (principal floor) of the palaces which border the hill-side on which the city stands.

ROME

The Renaissance style, when adopted in Rome, was marked by the traits common to it in Europe generally (p. 542), and had, in addition, its special Roman character. The Classic Orders were used in façades and cortili (pp. 567, 568, 570, 578), and conformity to ancient Roman architecture prevailed, while the size and simplicity of Roman palaces are alone sufficient to produce an effect of dignity (pp. 567 A, 578 B). The principle of unity animated architects of the later school, and this unity of design was achieved by including, as in the Capitoline façades, two or more storeys in one Order of pilasters, sometimes crowned by an attic storey. Arcuation was sparingly introduced, except in tiers of arcades, in imitation of the Colosseum. Roman Renaissance ornament displays great technical skill and fine craftsmanship, owing to the facility for studying the best examples of ancient Roman art, but more especially owing to the inherited capacity of Roman craftsmen (pp. 607, 608).

The Baroque style (p. 545) arose first in Rome when architects had become satiated with the old and purely Classic forms and hungered for something fresh and piquant. Classic and Renaissance architecture had its chief expression in the straight line, with all the limitations this implied, and the Baroque style may be said to be the architecture of the curved line, with all the variety of possibilities to which this gives rise. A large number of churches of the later Renaissance period in the City of the Popes, if not flauntingly Baroque, have at any rate the seed of the new style in the freedom of plan and design. In Rome, the place of its birth, this new version seems more in harmony with its surroundings than in the less brilliant northern climates, and in gazing on the many fountains of the papal city who shall dare to say that the Baroque is wholly bad ? From Rome the style naturally travelled to Naples and many cities of southern Italy, such as the unique little town of Lecce, where it was often used in a discriminating way to produce pleasingly original effects.

VENICE

The Renaissance style in Venice is distinguished from that of the rest of Europe by features peculiarly Venetian, and it is coloured by the history and unique character of the sea-city, with its own beautiful type of Gothic architecture, far from Rome and from her Classic traditions. Therefore, between Gothic and fully developed Renaissance, there was a period of transition during which Venetian buildings displayed combined Gothic and Renaissance features, as seen in the pointed arches of the Renaissance façade in the courtyard of the Doge's Palace (p. 591 B). The architecture of Venice is, in general, lighter and more graceful than that of Florence, and both columns and pilasters are freely used in design. A special Venetian feature is the central grouping of windows framed on either side by unbroken wall spaces of the comparatively flat palace façades which outline the water-ways (p. 592). The

rustication of walls, as at Florence, is unusual, and there is generally an Order with its cornice to each storey, in contrast to the great crowning Florentine cornices. The frieze was sometimes of great depth with windows worked into it (pp. 592 C, 596 A). Balconies (pp. 592 B, D, 611 B) are graceful and important features and their projection gives light and shade to the flat façades, which elsewhere are obtained by recessing portions of the structure. The regularity of a Venetian façade is described by Browning :

> " Window just with window mating,
> Door on door exactly waiting."

The Grand Canal, which forms the main highway of Venice, is made famous not only by its fine palace façades, but also by its incomparable Rialto Bridge, with its shops and fine architectural treatment (p. 611 E).

The later period of Venetian Renaissance is characterised by perfection of boldly designed detail which produced strong effects of light and shade, as in S. Mark's Library and in palaces by Sansovino (A.D. 1486–1570) ; while heavy rustication distinguished the basement from the upper part of the façades (p. 592 A, B, C). Venetian Renaissance ornament, whether in doorways, capitals, entablatures, panels, or candelabra, is characterised by refinement and freedom of line, with the natural additional introduction of seaweed forms amongst the carved foliage (pp. 611, 612).

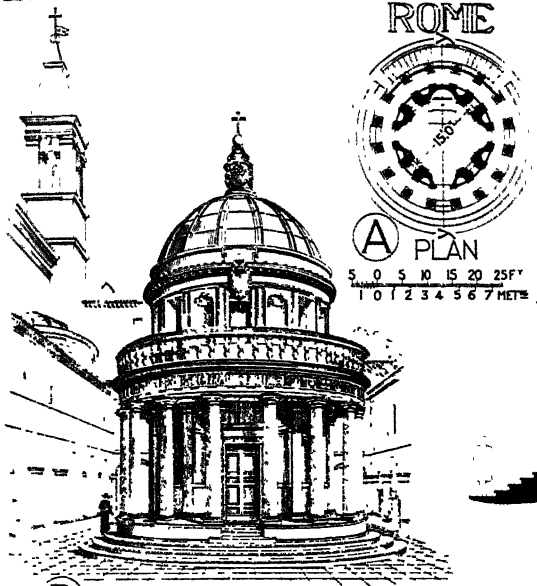
The Baroque style (p. 545) may be said to have been welcomed in Venice as yet another opportunity of giving expression to her own free and independent spirit. She had never been trammelled by any undue observance of hard-and-fast rules of style in the erection of the wonderful buildings on her ocean site. Now the moment was opportune for starting some new styles, for the sea-city was ready to erect churches as votive offerings to God for deliverance from the ravages of plague. The style of the curved line was not really suitable for palaces which rose sheer from the waters of the canals, because here the fact that they were reflected in the water may have unconsciously limited the design to the use of straight lines in façades ; but for churches, which were often set back on their stepped approaches, it was possible to get an all-round treatment, more like that of the French country châteaux, which were to be seen, not only on a frontage but also on all sides. Thus S. Maria della Salute (p. 604 A), rising gloriously from her water-steps, crowned by her great dome upheld by scrolled buttresses, emphasised both by lateral pinnacles and by the choir dome and with all the free paraphernalia of sinuous lines and broken pediments, is typical of the free Venetian spirit. As we gaze upon this unique pile, gorgeous in its freedom of conception and execution, we cannot but feel that here is the apotheosis of the Baroque style ; and indeed we ask ourselves : what would Venice be without the Salute ?

3. EXAMPLES

FLORENCE

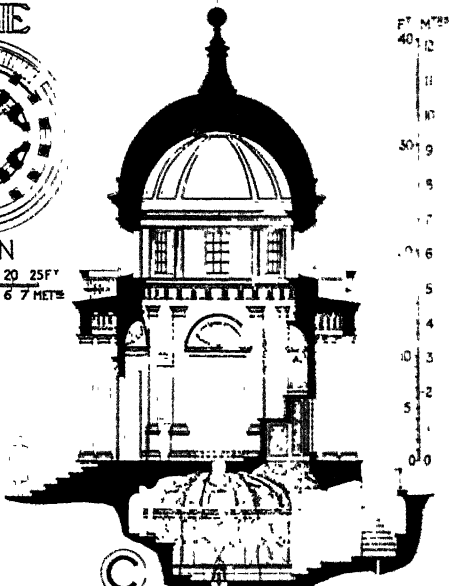
BRUNELLESCHI (A.D. 1377–1446), one of the most famous sons of Florence, entered the competition among sculptors in A.D. 1401 for the bronze north doors of the Baptistery, Florence—this competition marking the introduction of the Renaissance. Lorenzo Ghiberti, however, was successful, and the doors were executed A.D. 1403–24. Brunelleschi then set out for Rome to study Classic architecture at the fountain head. The Pantheon and other

TEMPIETTO IN CLOISTER: S. PIETRO IN MONTORIO ROME



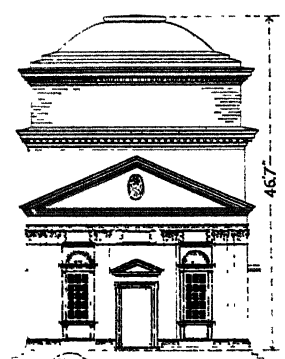
B EXTERIOR FROM CLOISTER

A PLAN

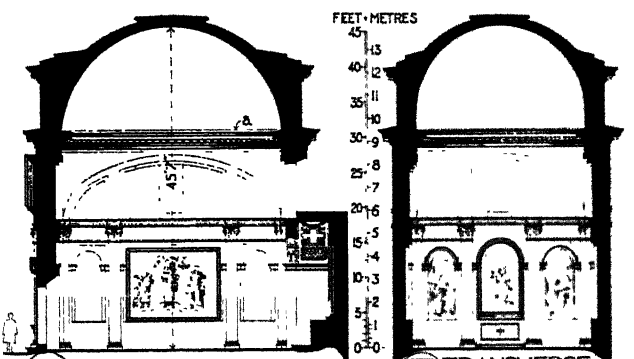


C SECTION ON LINE y-y

S. ANDREA: ROME

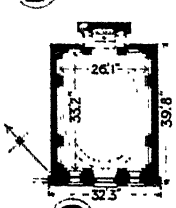


D ELEVATION

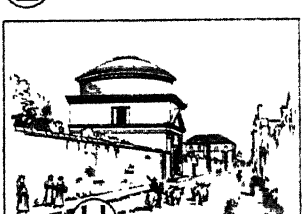


E LONGITUDINAL SECTION

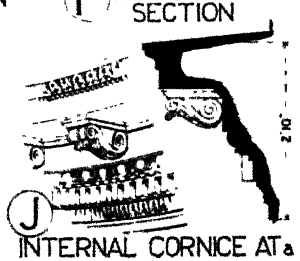
F TRANSVERSE SECTION



G PLAN

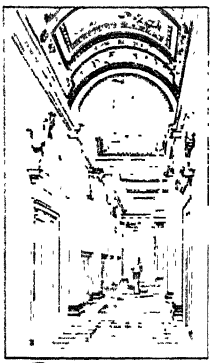


H EXTERIOR

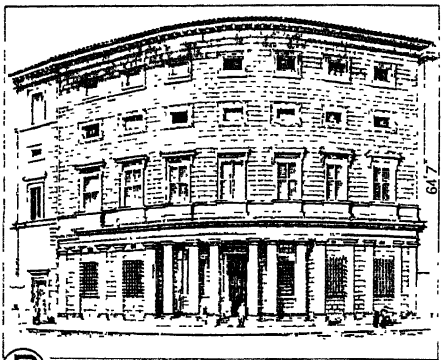


J INTERNAL CORNICE AT a

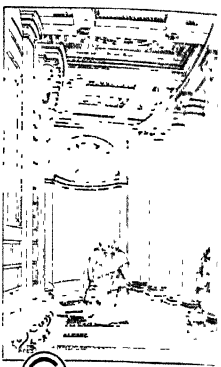
PALAZZO PIETRO MASSIMI : ROME



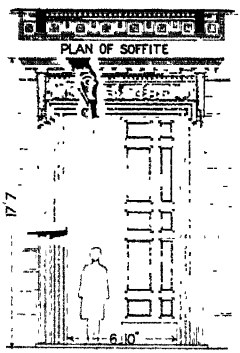
A ENTRANCE CORRIDOR



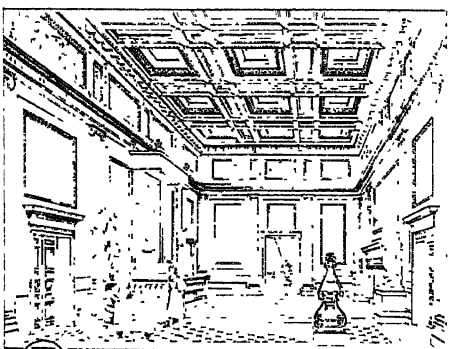
B EXTERIOR FROM CORSO V. EMANUELE



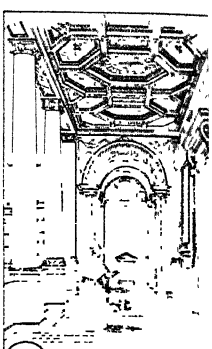
C VESTIBULE



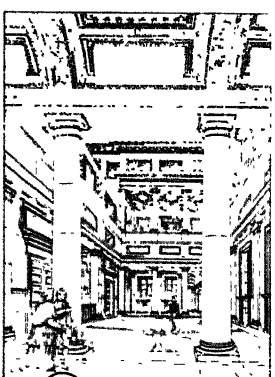
D ENTRANCE DOORWAY



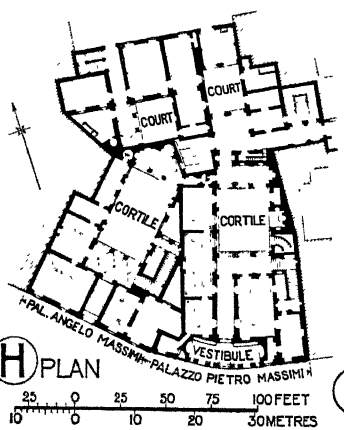
E INTERIOR OF GRAND SALON PIANO NOBILE



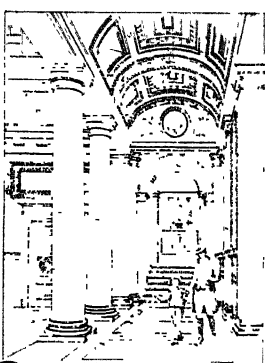
F UPPER LOGGIA



G CORTILE

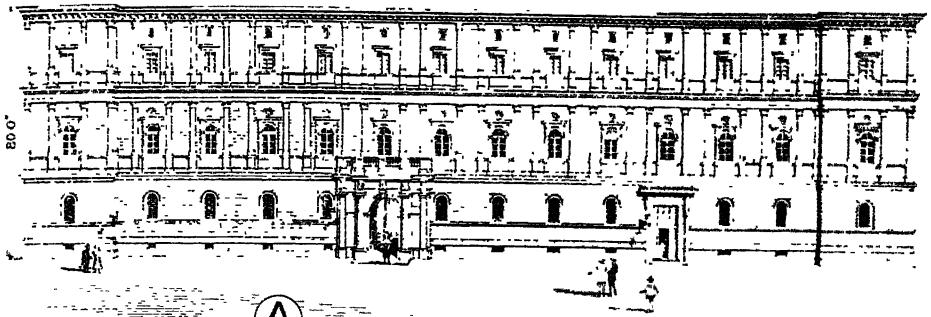


H PLAN

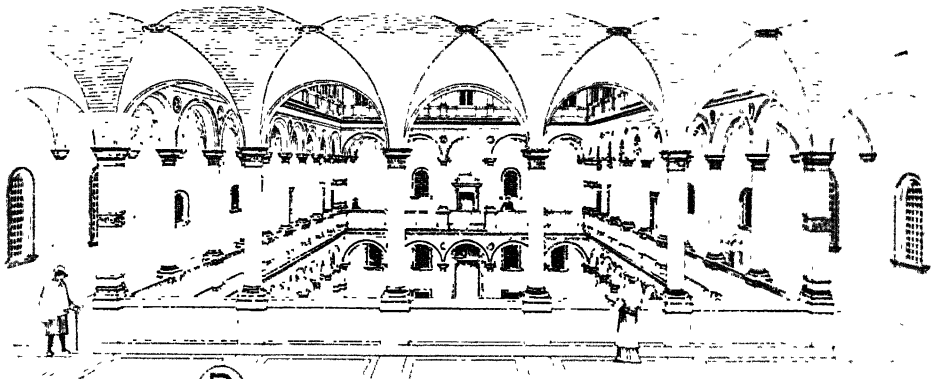


J PORTICO TO CORTILE

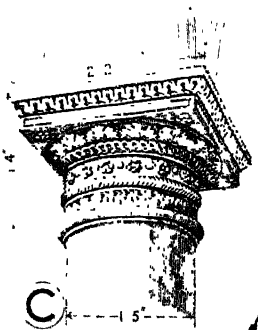
PAL. DELLA CANCELLERIA : ROME



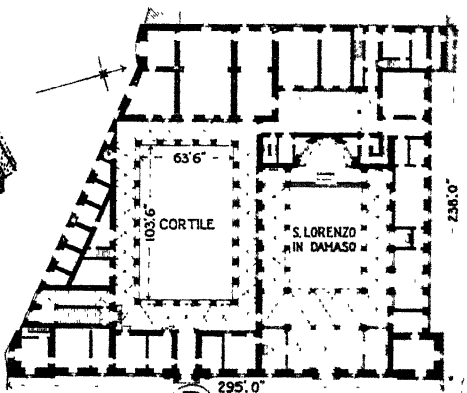
A FACADE TO THE PIAZZA



B THE CORTILE FROM UPPER STOREY

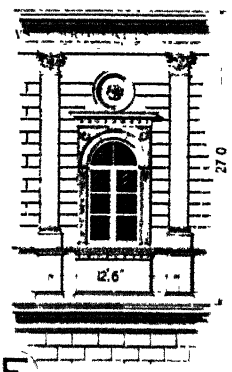


C CAPITAL: UPPER ORDER OF CORTILE



D PLAN

50 0 50 100 150 200 FEET
10 5 0 10 20 30 40 50 60 METRES



E FIRST FLOOR WINDOW



A. Palazzo Giraud, Rome



B. Palazzo Pandolfini, Florence

ancient buildings exercised a notable influence upon all his subsequent architectural designs.

The **Dome of Florence Cathedral** (A.D. 1420–34) (pp. 510 A, B, C, D, F, 513 A), which was entrusted to Brunelleschi as the result of a competition, is a miracle of design which triumphantly blended a Renaissance dome with a Gothic building and set the crown on that masterpiece of Mediæval Florence. The dome covers an octagonal apartment, 138 ft. 6 ins. in diameter, and is raised on a drum, with circular windows to light the interior. This unique dome, which is pointed in form, consists of inner and outer shells constructed on the Gothic principle, with eight main and sixteen intermediate ribs supporting panels. It is said that it was erected without centering, which at any rate may have been used only to a limited extent.

S. Lorenzo, Florence (A.D. 1425) (p. 555), is of the basilican type, with nave and aisles separated by Corinthian columns supporting entablature blocks, said to be the earliest instance of the use of such features in the Renaissance period; and the sanctuary is flanked by the Old Sacristy (A.D. 1421–28) and the more famous New Sacristy (A.D. 1523–29) added by Michelangelo (pp. 581, 583 B).

S. Spirito, Florence (A.D. 1436–82) (p. 556), is also of the basilican type, which had been preferred by the Italians through the Middle Ages, but has wide transepts making a Latin cross, and there are aisles round nave, transepts, and choir. The nave is flanked by arcades forming another early instance of columns supporting pieces of entablature interposed between them and the arches, while a flat timber ceiling covers the nave, and there is a dome over the crossing.

The **Pazzi Chapel, Florence** (A.D. 1429) (p. 555), designed on the lines of a prostyle Roman temple, is a miniature church in the cloisters of S. Croce, with a façade of six columns and an ornate vault forming the frontispiece and vestibule to a square compartment covered by a dome on pendentives. This is one of the most delightful smaller creations of Brunelleschi's genius.

The **Palazzo Pitti, Florence** (A.D. 1435) (p. 557), erected for Luca Pitti, a friend of Cosimo de' Medici, is the largest palace in Italy except the Vatican. It has a fine symmetrical plan, and is a grand and stately composition with a great central cortile and smaller lateral cortili added in A.D. 1640, but not until A.D. 1763 were the projecting wings added facing the Piazza. The façade, with three-storeyed centre 119 ft. high, is 660 ft. in length. It is of astylar treatment, bearing in its rugged simplicity a curious resemblance to the bold Claudian Aqueduct, with its massive blocks of masonry and arches of the ground storey (p. 605 F). The cortile (p. 557 D), seen from the famous Boboli Gardens, is unique in its columnar treatment of Doric, Ionic, and Corinthian half-columns. The palace is now the king's residence and partly occupied by the famous picture gallery.

The **Palazzo Quaratesi, Florence** (A.D. 1445) (p. 557 E), has rusticated walling and characteristic windows, each with a central shaft supporting sub-arches, reminiscent of Gothic tracery (p. 605 D), and is finished with a typical bold crowning cornice.

ALBERTI (A.D. 1404–72) was a student of Classical literature, and his book on architecture, "De Re Ædificatoria," helped to promote the revival of the old Roman style, as shown in the following buildings:—

The **Palazzo Rucellai, Florence** (A.D. 1451) (p. 557 G), generally regarded as the first Renaissance building in which superimposed pilasters were used, is refined in character, but lacks the dignity which would be bestowed by a

great crowning cornice, as in the Palazzo Riccardi ; while the design is more ornate and less massive than those of Brunelleschi.

S. Francesco, Rimini (A.D. 1447–55), a Gothic church, was remodelled for Malatesta, the Lord of Rimini, in the revived style, and Alberti's façade, which was never completed, appears to have been based on the Arch of Augustus in the same city.

S. Maria Novella, Florence, a Gothic church (p. 508), has a Renaissance façade (A.D. 1456–70) (p. 550) by Alberti, and was one of the first churches in which flanking scrolls were used to connect aisles and nave into one composition.

S. Andrea, Mantua (A.D. 1472–1512) (p. 556), is of special significance as the prototype of many modern Renaissance churches. The fine entrance portico, on the model of a Roman triumphal arch, leads into an imposing and finely proportioned aisleless nave, flanked by side chapels between piers which are faced with coupled Corinthian pilasters on pedestals, and support a richly coffered barrel vault. The transepts and apsidal sanctuary, with its three windows under a semi-dome, and the high central dome (A.D. 1732–82) were later additions.

MICHELOZZO (A.D. 1397–1473) was a friend of Cosimo de' Medici, whom he accompanied in exile to Venice, and there studied architecture.

The **Palazzo Riccardi, Florence** (A.D. 1430) (p. 558), is Michelozzo's best-known building, and here Lorenzo the Magnificent kept his brilliant Court. The palace was sold (A.D. 1659) to the Riccardi family. The plan (p. 558 F) has a cortile or peristyle (p. 558 C), as in Pompeian houses, around which are ranged the various rooms with the grand stair to the " piano nobile." The exterior, in three storeys, is an admirable example of the effective use of graduated rustication. The ground storey has heavily rusticated masonry with semicircular arches enclosing windows of the pediment type (p. 558 E) ; the intermediate storey has drafted stone walling with traceried windows (p. 558 G) ; and the upper storey, in plain ashlar masonry, has similar windows, and the whole façade is crowned by a bold cornice projecting over 8 ft. (p. 558 A).

IL CRONACA (A.D. 1454–1508), a friend of Savonarola, had sojourned in Rome and there made a study of ancient buildings.

The **Palazzo Strozzi, Florence** (A.D. 1489) (p. 561), begun by da Majano, was completed by Cronaca. The chief features are a large central cortile with arcades on the three storeys, off which are the stairs and surrounding rooms. The façade (p. 561 B, D) has one unbroken surface—an early example of the astylar treatment. The rusticated walls have moulded string courses emphasising the storeys and producing an effect of horizontality, which is further accentuated by the grand crowning cornice (p. 561 F) which projects over 7 ft. and is about one-tenth the height of the building. The windows (p. 561 H), angle-lantern, and link-holder (p. 561 A, C) are attractive features of this famous façade.

The **Palazzo Guadagni, Florence** (A.D. 1490) (p. 557 F), with sgraffito plaster in the façade and loggia under the flat roof, was also designed by Cronaca.

FILARETE (A.D. 1396–1465), a famous Florentine sculptor, was also an architect of note and is best known for the following building :—

The **Ospedale Maggiore, Milan** (A.D. 1457) (p. 563 F, G, H), a late Gothic structure (p. 507) and one of the earliest municipal hospitals, has façades with delicate detail of transitional character, very suitable to the plastic

terra-cotta in which it is modelled. The building was continued by Solari, and finally completed about A.D. 1624 by Richino.

BORGOGNONE (A.D. 1455–1524) was an architect responsible with others for some important buildings.

The **Certosa, Pavia,** has a remarkable façade (A.D. 1473) (p. 564 A) added by Borgognone, assisted by other architects, to the church erected in the Gothic period (A.D. 1396) (p. 500). This celebrated frontispiece in gleaming marble, which has taken on a rich golden hue, is contained within a Lombard Gothic framework, filled in with Renaissance features, such as profusely ornamented windows, arcaded galleries and statues in niches, which, together with carved ornament and medallions, make it one of the most elaborate combinations of architecture and sculpture, and on it many of the foremost sculptors were employed. The crowning dome over the crossing (A.D. 1491) (p. 514 F) is a storeyed Renaissance version of a Gothic spire of the type erected at Chiaravalle (p. 516 D) and Milan (p. 502 C).

ALESSI (A.D. 1500–72), a pupil of Michelangelo, designed many palaces at Genoa, mostly of brick faced with stucco, which are famous for their fine entrance vestibules, courtyards, and flights of steps, and the sloping sites were utilised by him and his followers to form beautiful vistas of terraces and hanging gardens. The façades frequently have rusticated basement storeys surmounted by decorative pilasters and a bold crowning cornice over attic windows inserted between supporting consoles.

The **Palazzo Municipio, Genoa** (A.D. 1564) (p. 562), has a magnificent plan (p. 562 C), sometimes attributed to Lurago, laid out on axial lines, with a central entrance leading to a large vestibule, whence steps give access to the cortile, beyond which other steps lead to the " piano nobile " and terraced gardens. The cortile (p. 562 D) is a type of many others in this city of palaces, and owes much of its interest to the sloping site on which it is built. The façade (p. 562 A), a dignified composition about 200 ft. long by 80 ft. high, has Tuscan and Doric pilasters, each framing two storeys of windows flanked by arcaded loggias giving breadth to the design.

The Palazzi Durazzo, Balbi, and Cambiassi all help to make Genoa famous for its street palaces, courtyards, and hanging gardens. Many Genoese palaces were painted wholly in monochrome, from which they received their name, as the Palazzo Bianco (white) and Palazzo Rosso (red), and the Italian sun bathes the whole in brilliance.

S. Maria di Carignano (A.D. 1552), by Alessi, was designed on the lines of Raphael's plan of S. Peter, Rome (p. 586 E).

ROME

BRAMANTE (A.D. 1444–1514) was born in Florence two years before Brunelleschi died, but as he studied in Rome he is regarded as the first Roman Renaissance architect of note. He was trained under the painter Andrea Mantegna, and was probably also a pupil of Alberti and began his independent work in the city of Milan. Bramante was a master of refinement in mouldings, carving, and detail generally, both in his treatment of pilasters and circular-headed openings set in square frames (pp. 568 A, 607 C), while his *ultima maniera* is seen in his grand designs for the Courts of Law (never finished) near the Tiber, and in his projected schemes for S. Peter, Rome (p. 582). He handed on the style of Alberti and also, by his own designs, considerably guided the development of Renaissance architecture, not in Italy only, but also in Europe generally.

S. Satiro, Milan (A.D. 1474), a well-known church by this master on the site of an older building, has an octagonal sacristy (now the baptistery) of great beauty, and is notable for a curious chancel designed in perspective to simulate a choir.

S. Maria delle Grazie, Milan, is a fifteenth-century abbey church, to which (A.D. 1492–97) Bramante added the choir, transepts, and dome of 65 ft. diameter (p. 563) on a plan somewhat similar to the Certosa, Pavia (p. 500). The exterior (p. 563 B) is transitional, and is an instance of the successful use of brick and terra-cotta on the traditional lines of North Italian craftsmanship. The square mass supporting the dome is flanked by the apses, which spread the base of the structure and lead up to the sixteen-sided drum, of which the upper stage is an arcaded gallery concealing the dome and supporting the low-pitched roof.

The Palazzo della Cancelleria, Rome (A.D. 1495–1505) (p. 567), one of the master's best-known works, planned on an irregular site, is a good example of a Renaissance palace on axial lines, and was designed in conjunction with the church of S. Lorenzo (p. 567 D). The imposing cortile, 103 ft. 6 ins. by 63 ft. 6 ins., is surrounded by two storeys of arcades (p. 567 B) formed of antique Doric columns (p. 567 C) from the ancient basilican church of S. Lorenzo. The façade (p. 567 A) has an imposing doorway to the cortile flanked by channelled masonry pierced with small semicircular arched windows. The "piano nobile," with its coupled Corinthian pilasters and arched windows (p. 567 E), is surmounted by two storeys included in one Order of Corinthian pilasters, as in the Colosseum (p. 165 A). This façade, unusual in having projecting end bays, is an excellent example of good proportion and quiet treatment.

The Palazzo Giraud, Rome (A.D. 1503) (p. 568 A), is one of Bramante's later works with a pronounced Classical tendency. The ground storey has small windows and channelled masonry, the upper portion being similar to the Palazzo della Cancelleria.

The Vatican Palace, Rome (pp. 585, 590 A), contains the Cortile of S. Damaso (A.D. 1503–13), the Belvedere Court (A.D. 1503–13), and the Octagonal Court—originally square (A.D. 1486–92) but altered A.D. 1775—which are other well-known examples of Bramante's secular buildings.

The Tempietto in S. Pietro in Montorio, Rome (A.D. 1502–10) (p. 569), is a perfect architectural gem based on the design of a small Roman circular temple. It is only 15 ft. in diameter internally and is surrounded by a Doric peristyle, behind which rises the drum, pierced alternately with windows and shell-headed niches, and crowned by a dome.

S. Maria della Pace, Rome, has a beautiful cloister (A.D. 1504) (p. 607 E) surrounded by a two-storeyed arcade designed by Bramante, in which, as in other examples, the upper storey has twice as many openings as the lower. S. Maria della Pace itself is much later (A.D. 1655) with its skilfully designed plan and semicircular portico by Pietro da Cortona (A.D. 1596–1669).

Among the pupils and disciples of Bramante were Peruzzi, Sangallo, Raphael, and Giulio Romano, whose works are now described.

BALDASSARE PERUZZI (A.D. 1481–1536) designed many buildings in Rome, and few architects had such a thorough training for their work or made more satisfactory and scholarly designs.

The Palazzo Pietro Massimi, Rome (A.D. 1529) (p. 570), refined both in design and detail, is especially interesting for the clever treatment of a convex façade to follow the line of the street. The plan (p. 570 H) shows considerable skill in arranging two separate palaces on an irregular site. The entrance to

the right-hand palace is a recessed vestibule (p. 570 C) which leads into a cortile (p. 570 G) with portico (p. 570 J) and steps to an upper loggia (p. 570 F), whence the grand salon (p. 570 E) is reached. The façade (p. 570 B) relies for effect on the Doric Order of columns and pilasters stretching from end to end of the ground storey and the severe astylar treatment of the upper storey.

The **Villa Farnesina, Rome** (A.D. 1506) (p. 579 H), has two storeys of superimposed Orders and central arcaded loggia, famous for frescoes by Peruzzi and Raphael. The upper storey is cleverly contrived in the ornamental frieze in which windows are inserted—a method afterwards adopted by Sansovino in the Library of S. Mark, Venice (p. 596 A). Dorchester House, London, by Vulliamy, was founded on this design.

S. Maria della Consolazione, Todi (A.D. 1508–1604) (p. 577), designed by Cola da Caprarola, is ascribed to the influence of Peruzzi. It is one of the earliest Renaissance buildings on the Byzantine plan (p. 577 A), forming a square 50 ft. in diameter, off which are four apsidal arms of a Greek cross. The exterior (p. 577 B) has superimposed Corinthian pilasters, surmounted by a low attic, above which semi-domes give effective support to the central dome set on a high drum with windows, and rising to a height of 180 ft. The interior (p. 577 C) has a similar pilaster treatment and the lines are carried up to form the dome ribs.

ANTONIO DA SANGALLO the Younger (A.D. 1485–1546) worked in Rome most of his life, and was an assistant of Bramante.

The **Palazzo Farnese, Rome** (A.D. 1534) (p. 578), the grandest palace of this period, was designed by Sangallo. The plan (p. 578 G) is rectangular and symmetrically arranged on axial lines with main entrance, vestibule (p. 578 H), and side colonnades. The cortile, 81 ft. square, is surrounded by arcades off which are the apartments and a fine staircase to the "piano nobile." The loggia in the centre of the rear façade opens on to the garden. The façade to the piazza (p. 578 B) is an imposing astylar composition without any break, 185 ft. long by 96 ft. 6 ins. high, of three storeys of nearly equal height, of brick covered with stucco and stone dressings of travertine from the Colosseum. The ground storey has a fine central entrance (p. 578 C), flanked by windows; the "piano nobile" has pedimented windows (p. 607 A)—alternately triangular and segmental—while the top storey, added by Michelangelo (A.D. 1546), has windows (p. 607 B) with columns on brackets, surmounted by triangular pediments, the circular window arch encroaching on the entablature—a distinctive feature of Michelangelo's work; while the great crowning cornice (p. 578 A), in the Florentine manner, is about one-eleventh of the whole height. The façade was taken by Sir Charles Barry as the motif for the Reform Club, London. The cortile façades (p. 578 E, F) are designed with superimposed Orders as in the Colosseum.

RAPHAEL (A.D. 1483–1520), nephew and pupil of Bramante and one of the world's greatest painters, well exemplifies the versatility of the artists of those days; for he was architect as well as painter, and was called in by the Pope to advise as to the design of S. Peter's (p. 582), though he does not appear to have taken any actual part in carrying it out. The excavation of the Baths of Titus and Nero's Golden House gave Raphael an opportunity for studying painted frescoes in ancient Roman buildings, in which flowers and foliage, men and beasts, vessels and trophies were all blended together in delicate colour schemes, and on these Raphael based his decoration of the world-famous Vatican Loggie.

The **Villa Madama, Rome** (A.D. 1516) (p. 579 J), is a plain and simple structure from Raphael's design, and the charming loggia has frescoes of Giovanni da Udine and Giulio Romano and is surrounded by once famous gardens.

S. Lorenzo in Miranda, Rome, occupying the interior of the old Temple of Antoninus and Faustina (p. 145), has a façade executed A.D. 1602 from Raphael's design.

The **Palazzo Pandolfini, Florence** (A.D. 1530) (p. 568 B), erected ten years after his death, is one of Raphael's most famous designs, the "motif" of which was followed for the Travellers' Club, London. Here a plain wall treatment is set off with angle rustications which give an idea of strength, while the windows are designed as small temple fronts with alternate triangular and segmental pediments, and the whole is crowned by the usual deep Florentine cornice.

GIULIO ROMANO (A.D. 1492–1546), a pupil of Raphael, was the architect of buildings at Mantua, and also a painter of note.

The **Palazzo del Tè, Mantua** (A.D. 1525–35), a one-storey building decorated with the Doric Order, is his recognised masterpiece. It is quadrangular on plan, with large saloons round a central court. The arcades of the garden façades have painted ceilings, and the whole design is perhaps the nearest approach to a reproduction of an old Roman villa.

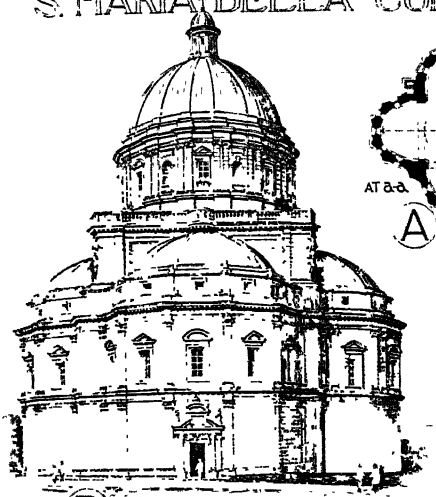
GIACOMO BAROZZI DA VIGNOLA (A.D. 1507–73) was the author of "The Five Orders of Architecture," a book which made a considerable impression upon contemporary design. He went to France in the train of Francis I (p. 620) and exercised great influence on the development of Renaissance architecture in France.

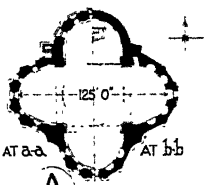
The **Villa of Pope Julius, Rome** (A.D. 1550) (p. 579), a typical Italian villa with courtyards and fountains, is one of Vignola's best-known works and now forms the Etruscan Museum. The plan (p. 579 A) shows a straight front with entrance leading to the semicircular grand cortile, formal garden, sunken grotto, summer rooms, and fountain court, which with caryatid figures, rippling water and tiny cascades, forms a delightful piece of garden architecture. The façade (p. 579 B) is a most pleasing composition and influenced later buildings. The entrance has rusticated Doric columns and side niches, and the ground-floor windows (p. 579 E) and first-floor windows (p. 579 G) are of well-balanced design. In the semicircular façade to the grand cortile (p. 579 F) both the centre and wings are treated on the triumphal arch "motif."

The **Palazzo Farnese, Caprarola** (A.D. 1547) (p. 580), a semi-fortress of pentagonal form situated on a mountain spur, is one of the most magnificent of all Renaissance palaces, and recalls Hadrian's mausoleum in mass and outline, while the circular internal court suggests the Colosseum, Rome. The plan (p. 580 D) is a great rectangular pentagon, each side being 150 ft. long. Steps lead up to the Gran Sala, beyond which is a circular cortile, 65 ft. in diameter, while in one angle is the famous circular open staircase (p. 580 C) (cf. Château de Chambord, p. 631). The general lay-out (p. 580 A), with entrance portal, circular ramps, stairs, and moat, makes a fine symmetrical and monumental group.

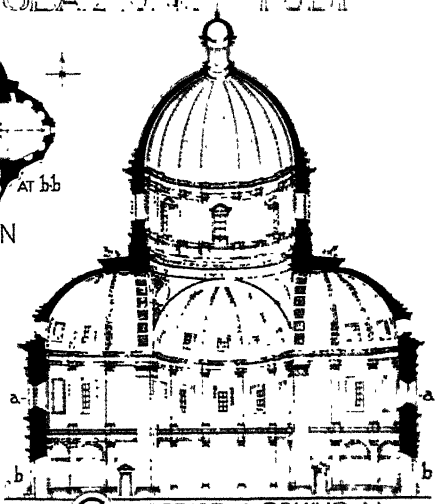
S. Andrea, Rome (A.D. 1550) (p. 569), one of Vignola's smaller works, is of considerable interest. The plan (p. 569 G) is oblong, crowned by an elliptical dome on pendentives in the Byzantine manner, which is partly concealed externally by a quasi-drum, as in the Pantheon, Rome (p. 153 A). The entrance façade (p. 569 D) has pilasters, central doorway, and side windows, and a pediment forming part of the square mass of

S. MARIA DELLA CONSOLAZIONE : TODI





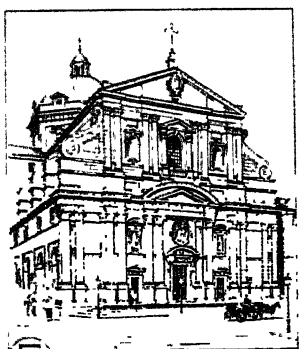
A PLAN

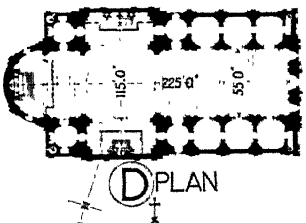


B EXTERIOR FROM E.

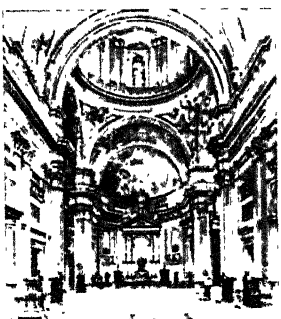
C INTERIOR LOOKING N

IL GESU : ROME



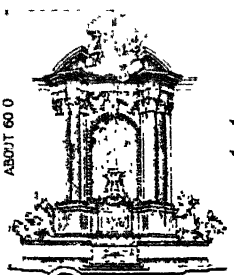


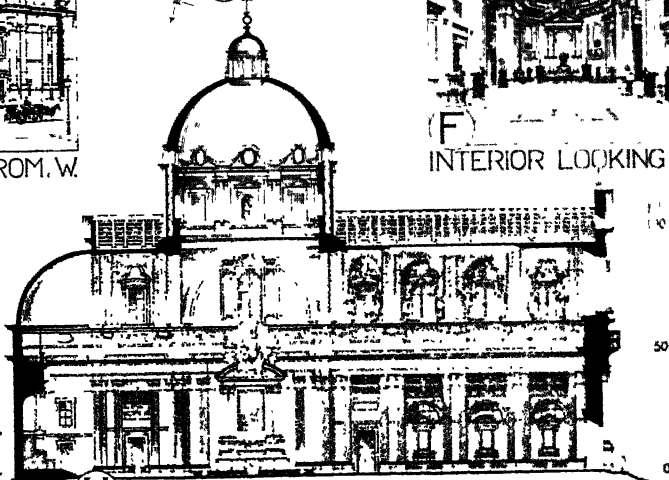
D PLAN



E EXTERIOR FROM W.

F INTERIOR LOOKING E.

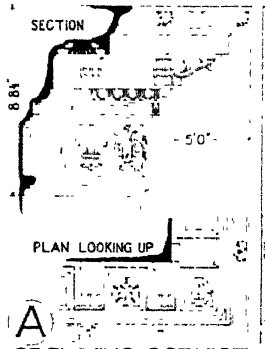




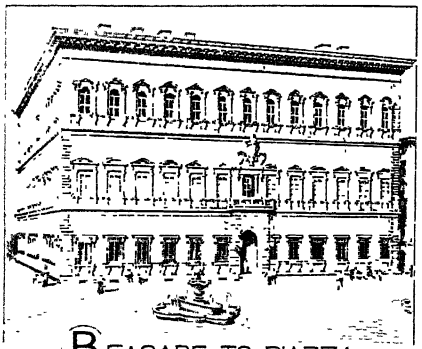
G ALTAR IN N. TRANSEPT

H LONGITUDINAL SECTION LOOKING S.

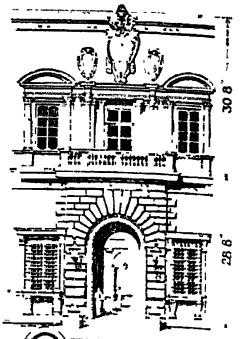
PALAZZO FARNESE: ROME



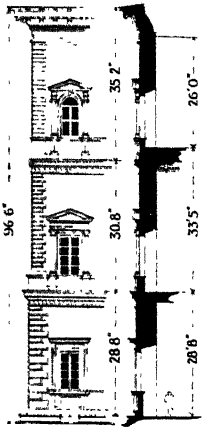
A CROWNING CORNICE



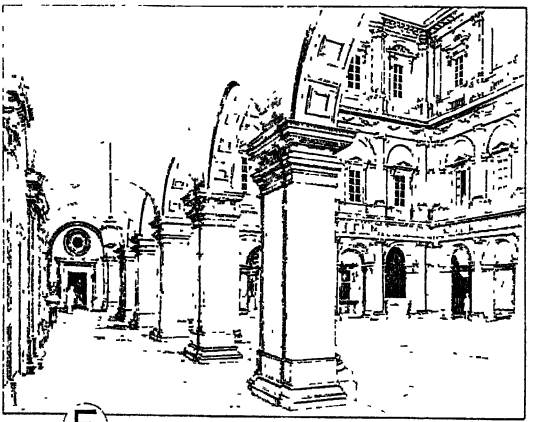
B FACADE TO PIAZZA



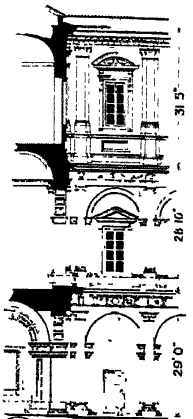
C ENTRANCE



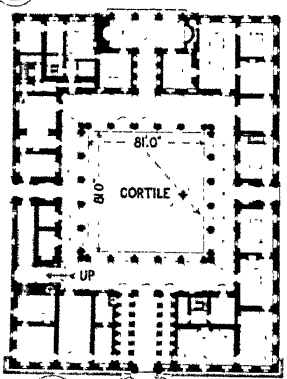
D BAY OF FACADE



E THE CORTILE FROM ARCADE

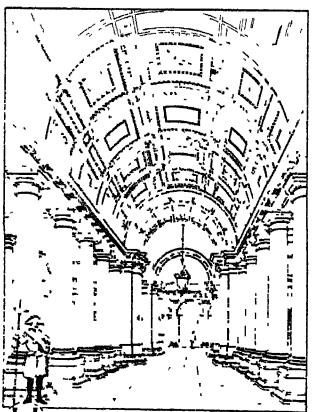


F BAY OF CORTILE

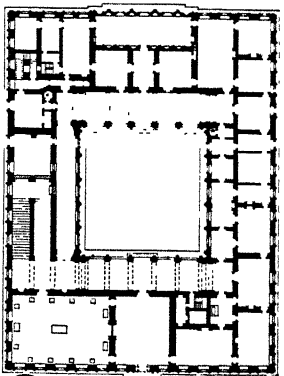


G GROUND PLAN

50 0 50 100 FEET



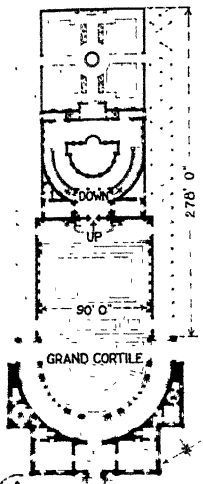
H ENTRANCE VESTIBULE



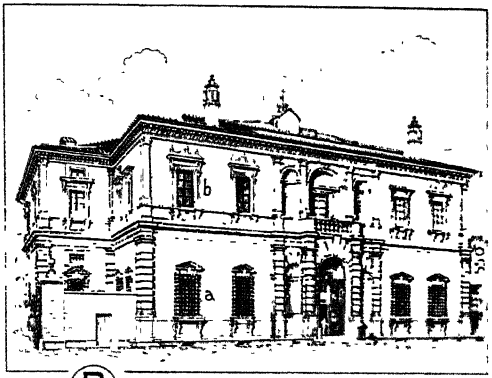
J FIRST FLOOR PLAN

10 0 10 20 30 40 METRES

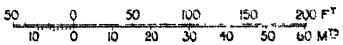
VILLA OF POPE JULIUS: ROME

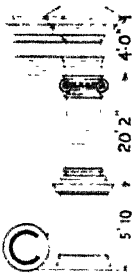


A GROUND PLAN

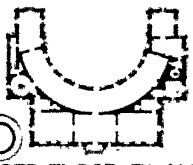


B ENTRANCE FACADE

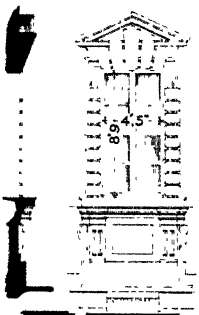




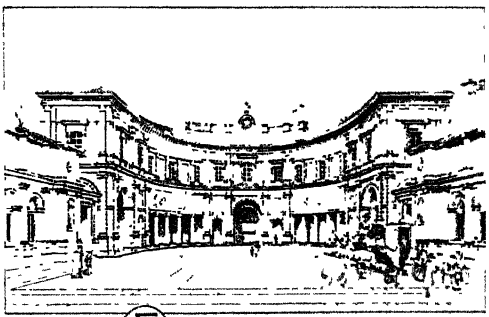
C LOWER ORDER GRAND CORTILE



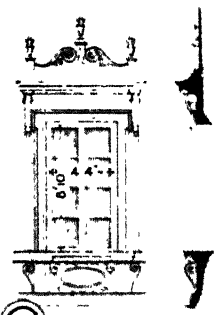
D UPPER FLOOR PLAN



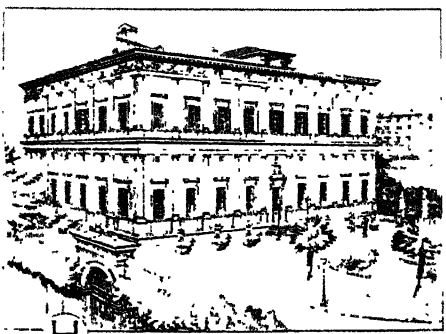
E WINDOW AT a



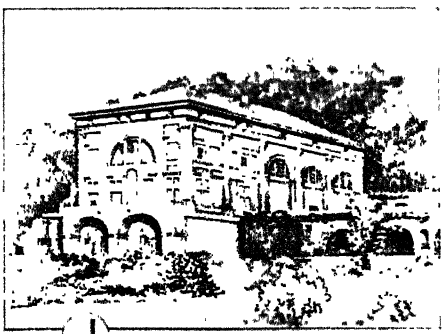
F GRAND CORTILE



G WINDOW AT b

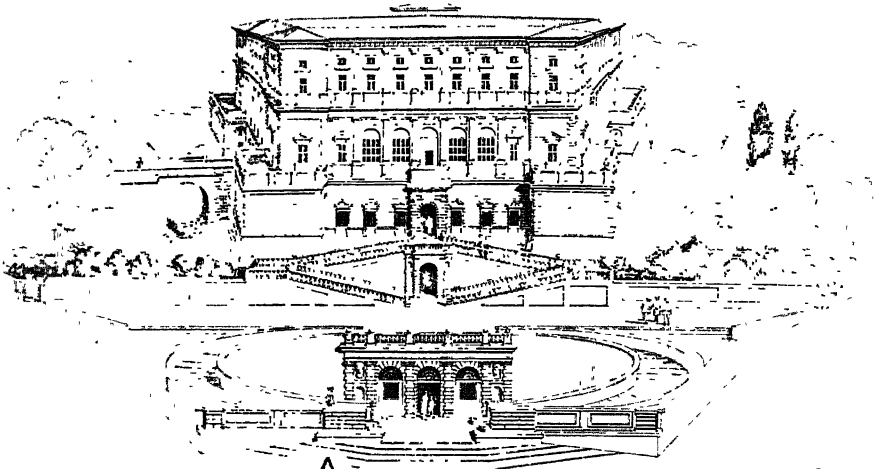


H VILLA FARNESINA: ROME

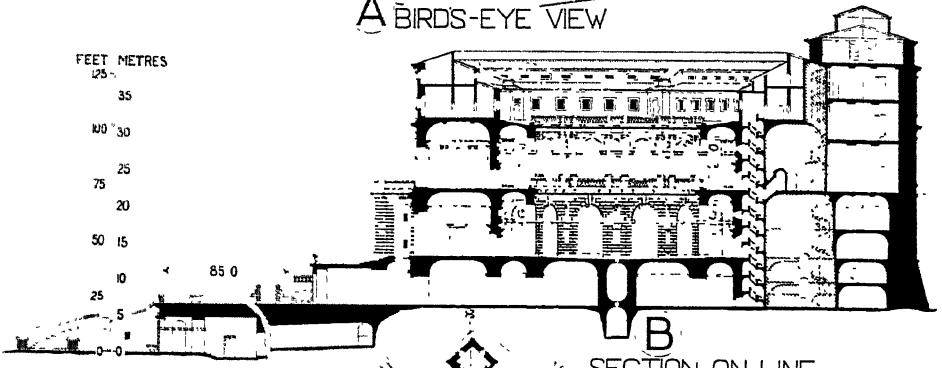


J VILLA MADAMA: ROME

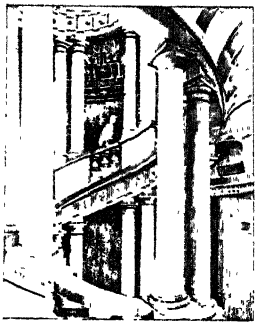
PAL. FARNESE: CAPRAROLA: Nr ROME



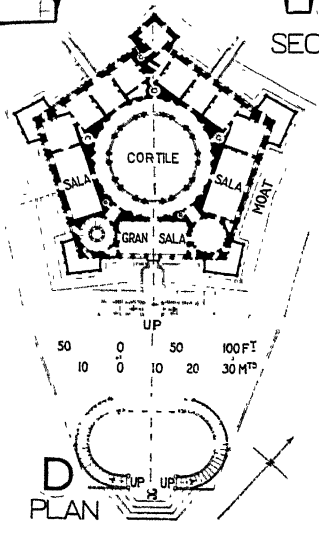
A BIRDS-EYE VIEW



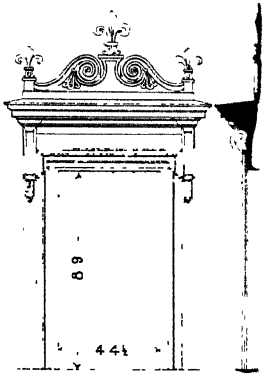
B SECTION ON LINE x-x



C INTERIOR OF CIRCULAR STAIRS



D PLAN



E FIRST FLOOR WINDOW

the structure and not brought forward as in the Pantheon portico. The internal cornice (p. 569 J) is a refined example of this master's work.

The **Gesù Church, Rome** (A.D. 1568–75) (p. 577), is one of Vignola's best-known works. The plan (p. 577 D) shows a nave with side chapels in lieu of aisles, transepts of slight projection, a dome over the crossing, and an apse. The altar (p. 577 G) in the north transept is Baroque in treatment. The façade (p. 577 E) has a centre-piece of two superimposed Orders, while the aisle roofs stop against large scroll brackets, as used by Alberti at S. Maria Novella, Florence (pp. 550, 572). The internal treatment (p. 577 F), similar to that of S. Peter, Rome, was, with its marble-covered walls, taken as the model for many Jesuit churches of the Baroque type (p. 546).

The two small cupolas at S. Peter's (p. 582), and the Palazzo Municipale, Bologna (unfinished), were also from the designs of this master.

MICHELANGELO (A.D. 1474–1564), the famous Florentine sculptor and the painter of the roof of the Sistine Chapel (A.D. 1508), was no less famous in his later years as an architect, and is a most striking instance of the wonderful versatility of artists of this period.

The **Biblioteca Laurenziana, Florence** (A.D. 1523–26) (p. 583 A), adjoining S. Lorenzo, is approached by a fine triple staircase completed in A.D. 1571 by Vasari from Michelangelo's design, with flanking walls in which coupled columns, supported on large consoles, are set in recesses in the walls with niches between—an artificial treatment often regarded as heralding the Baroque manner. The library, designed to contain the books of the Medici, has walls ornamented by pilasters and a fine timber ceiling, all from Michelangelo's designs.

The **Medici Mausoleum, Florence** (A.D. 1523–29) (p. 583 B), occupies the New Sacristy (p. 555 K) in S. Lorenzo, and was added by Michelangelo to correspond with the Old Sacristy built (A.D. 1421–28) by Brunelleschi. The interior, 40 ft. square, exemplifies architecture and sculpture in perfect harmony. Pilasters of black Istrian stone carry the main entablature, which is surmounted by an attic with pilasters framing windows and niches. The deep semicircular arched recess contains the altar, and on the right is the tomb of Giuliano de' Medici, whose statue, representing him as a general of the Church, is in a niche flanked by white marble coupled pilasters and niches. The sarcophagus is world-famed, with its curved pediment supporting two reclining symbolic figures of Night and Day. On the opposite side of the chapel is the figure of Lorenzo in an attitude of meditation, and beneath is his sarcophagus, with two reclining figures of Evening and Dawn. These figures by Michelangelo symbolise not only the trials and difficulties of the Medici, but also his own views of the internal policy and intrigues of Florence in his day.

The Capitol, Rome (A.D. 1540–1644) (p. 584), was Michelangelo's most successful civic work, and was a fine town-planning improvement. He not only remodelled on symmetrical lines the approaches to the piazza, but also designed the great palace façades on either side. He superintended the erection only of the approach stairway and the statue of Marcus Aurelius (p. 584 C) in the centre of the piazza, the remainder being executed from his designs by his successors. The "**Palazzo dei Conservatori**" (A.D. 1564–68) (p. 584 A, D, E) has a façade 66 ft. high: the "**Palazzo del Senatore**" (A.D. 1592) rises 90 ft. high and has a rusticated basement with imposing flights of steps and giant Corinthian pilasters carried through two storeys, and a campanile (A.D. 1579) erected by Pope Gregory XIII, which, built over the ancient tabu-

larium (pp. 139, 140 A), overlooks the Forum, while the "**Capitoline Museum**" (A.D. 1644–55) (p. 584 A, B, E, F), which also illustrates Michelangelo's method of securing unity by carrying up a single Order, was added to correspond with the Palace opposite. The design was completed by the fine flights of steps leading left and right to the triple-arched colonnades added (A.D. 1550–55) by Vignola.

S. Maria degli Angeli, Rome (p. 161 A, D, F), was a daring experiment by which in A.D. 1563 Michelangelo converted the tepidarium of the Baths of Diocletian into a Christian church. This tepidarium (200 ft. by 80 ft.) became the nave of the church, but in A.D. 1749 Vanvitelli transformed the nave into a huge transept, placed the entrance on the west side, and formed a deep chancel on the east. The actual bases of the ancient monolithic granite columns are 7 ft. below the new floor constructed by Michelangelo.

This great master was also responsible for many important features in the planning and final treatment of S. Peter, Rome, which is therefore dealt with under his name.

S. Peter, Rome (A.D. 1506–1626) (pp. 585, 586, 589, 590), the most important building of this period, was the outcome of the work of many architects under the direction of many popes during a period of 120 years. The present Cathedral had its origin in the intention of Pope Julius II to erect a tomb house for himself (A.D. 1505) (p. 559). This Pope was an outstanding personality as pontiff, statesman, and patriot, with great ambitions for the papacy, the Church, and Italy; so his initial personal project finally took the form of ruthlessly pulling down the old basilican church (p. 203) in order to erect such a monument as should enshrine all the magnificence which he wished to stand as associated with the papal power, the Christian religion, and the Latin race. A competition produced a number of designs—still preserved in the Uffizi Gallery, Florence—and that of Bramante was selected. In A.D. 1506 the foundation stone was laid of Bramante's church, planned as a Greek cross, and his proposed dome (p. 586 B) was founded on that of the Pantheon, with the addition of a peristyle and lantern. In A.D. 1513, on the death of Julius II, Bramante was superseded by Giuliano da Sangallo, Fra Giocondo, and Raphael, but the two former died in A.D. 1515. Raphael proposed a plan (p. 586 E) in the shape of a Latin cross, but he died in A.D. 1520, and Baldassare Peruzzi, who was then appointed architect, reverted to the Greek cross plan (p. 586 F). Ecclesiastical funds were now running short, there were troubles both in Church and State, and finally the capture and sack of Rome disorganised all artistic projects. In A.D. 1536, on the death of Peruzzi, Antonio da Sangallo the Younger submitted a slightly altered plan, with an extended vestibule (p. 586 G), lofty campanile, and elaborated central dome (p. 586 D). On his death, ten years later, Michelangelo, then in his seventy-second year, succeeded him, and the present building owes most of its outstanding features to his genius. He reverted to a Greek cross plan, strengthened the piers of the dome, and redesigned the surrounding chapels and apses. He planned and indeed commenced the construction of the great dome, the drum of which was completed before his death, in A.D. 1564, and he left models for dome and lantern. From these models the dome was completed (A.D. 1585–90) by Giacomo della Porta and Domenico Fontana. In A.D. 1564 Vignola had added side cupolas (pp. 585 A, 589 C), but these became ineffective when Carlo Maderna lengthened the nave to form a Latin cross (p. 589 G), and added the gigantic façade (A.D. 1606–12). Finally Bernini erected (A.D. 1655–67) the noble

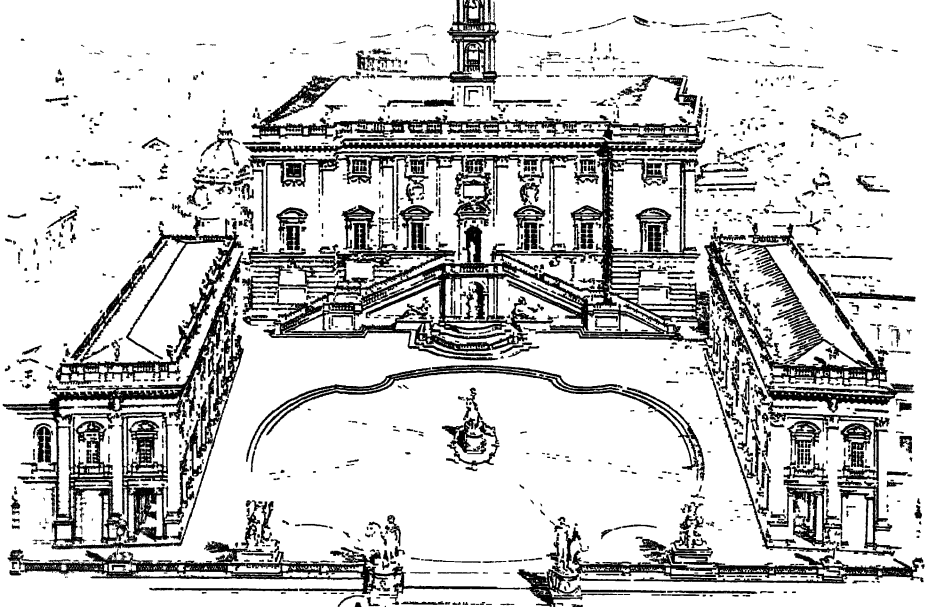


A. The Biblioteca Laurenziana, Florence

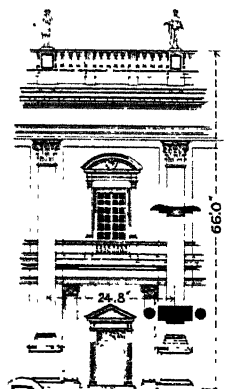


B. The Medici Mausoleum (New Sacristy), S. Lorenzo, Florence

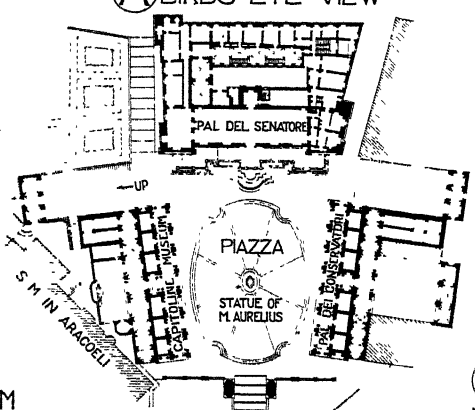
THE CAPITOL AT ROME



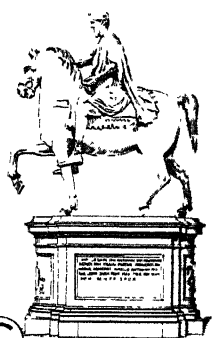
A BIRD'S-EYE VIEW



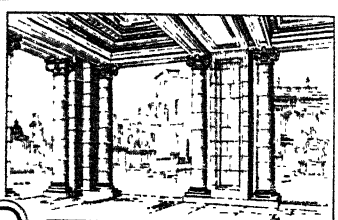
B A BAY OF MUSEUM



E PLAN



C STATUE OF MARCUS AURELIUS



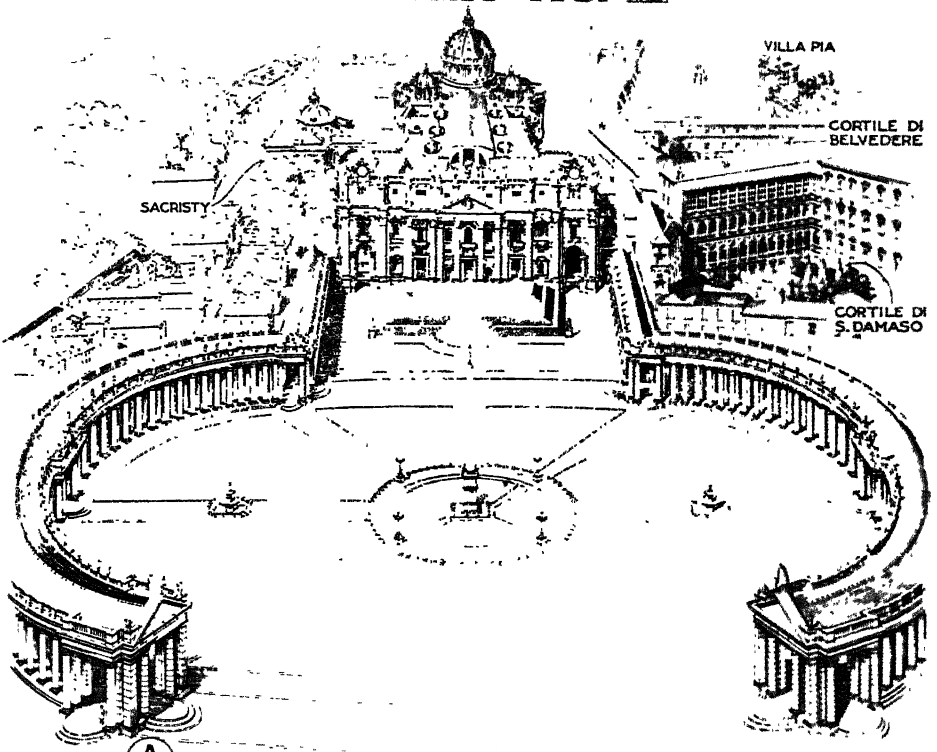
D PORTICO: PAL. DEI CONSERVATORI



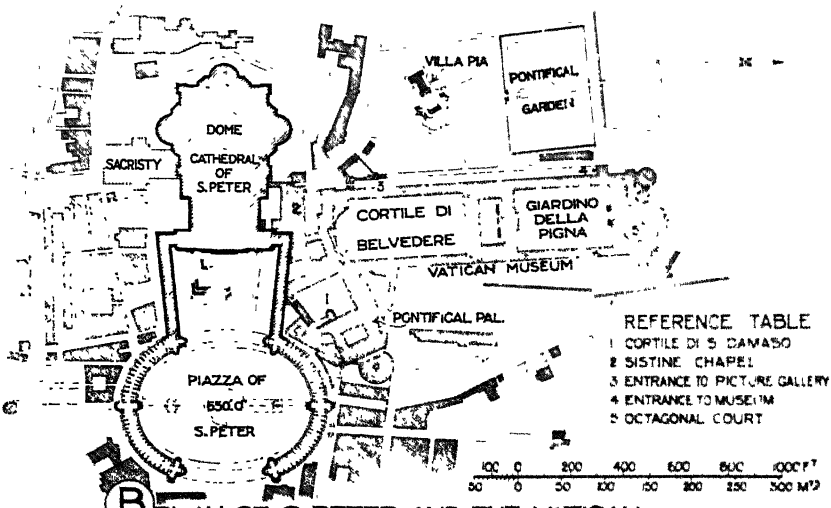
F MUSEUM FROM THE PIAZZA

25 0 50 100 150 FEET
10 0 10 20 30 40 METRES

S. PETER : ROME

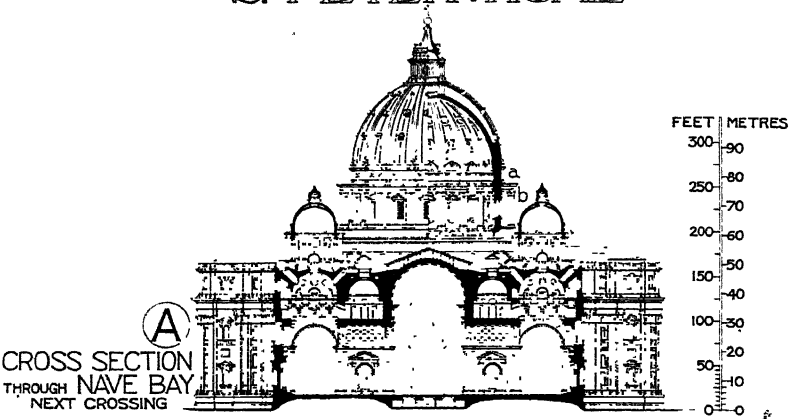


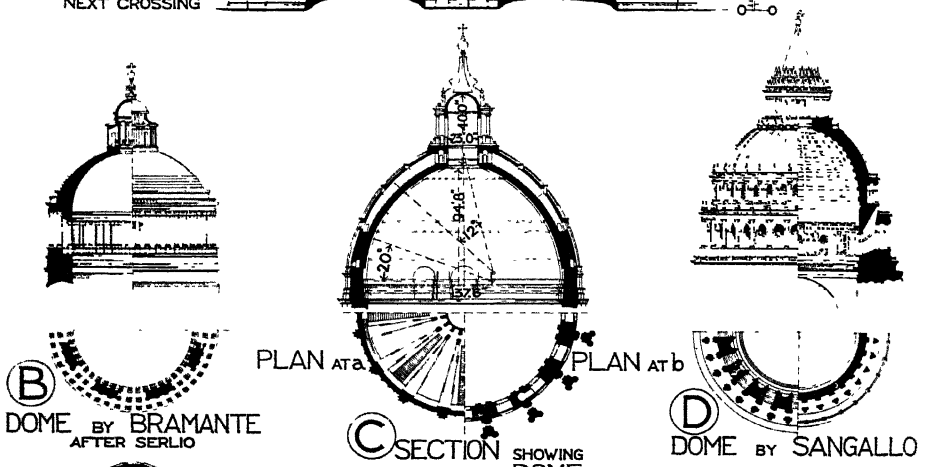
A BIRD'S-EYE VIEW OF S. PETER AND THE VATICAN

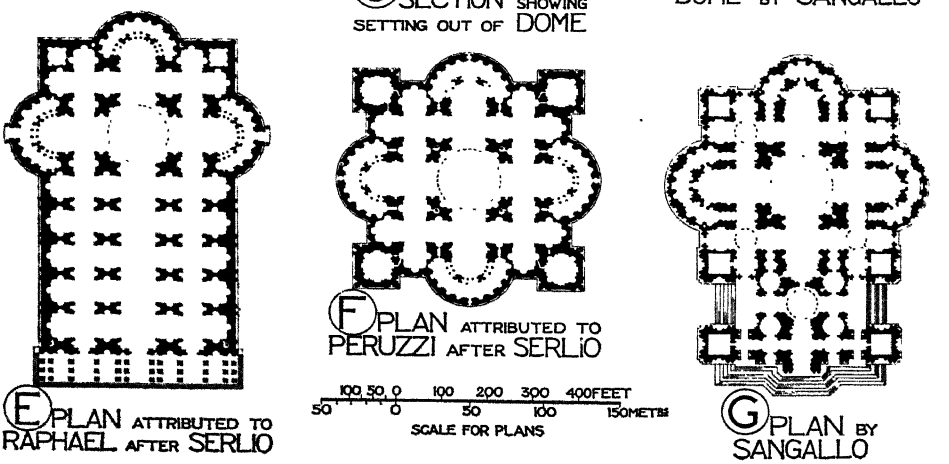


B PLAN OF S. PETER AND THE VATICAN

S. PETER : ROME


FEET METRES
300 90
250 80
70
200 60
50
150 40
100 30
20
50 10
0 0
a
b
A CROSS SECTION THROUGH NAVE BAY NEXT CROSSING


B DOME BY BRAMANTE AFTER SERLIO
PLAN AT a
PLAN AT b
C SECTION SHOWING SETTING OUT OF DOME
D DOME BY SANGALLO


E PLAN ATTRIBUTED TO RAPHAEL AFTER SERLIO
F PLAN ATTRIBUTED TO PERUZZI AFTER SERLIO
100 50 0 100 200 300 400 FEET
50 0 50 100 150 METRES
SCALE FOR PLANS
G PLAN BY SANGALLO

entrance piazza, 650 ft. wide, surrounded by 284 columns forming the imposing fourfold Tuscan colonnades (pp. 585, 590).

" With arms wide open to embrace
The entry of the human race."—BROWNING.

Cathedral, Piazza, and Vatican form a world-famous group, colossal in scale (p. 585 A, B). The plan (p. 589 G), of enormous proportions, is a Latin cross with an internal length of 600 ft., and an internal width across the transepts of 450 ft., while the total external length, including portico, is 700 ft., or about half as much again as that of Salisbury Cathedral. The nave, 84 ft. wide, consists of four immense bays, and is about the same width as the Basilica of Constantine (p. 157 E), and considerably longer. The crossing is covered by the stupendous dome, 137 ft. 6 ins. internal diameter, while the short transepts and the sanctuary are terminated by semicircular apses. The magnificent entrance portico, 234 ft. by 43 ft. 6 ins., extends the whole width of the church (p. 589 F, G), and leads to the vast interior (p. 590 B), the walls of which are richly coloured to imitate marble. It is almost impossible to gauge its vast proportions, and this difficulty is further increased by the false idea of scale given by such features as the colossal cherubs, about 7 ft. high, which support the holy water stoups, and an idea of the actual size can only be estimated by comparison with the groups of moving people. The mighty nave is flanked by great piers faced by a gigantic Order of Corinthian pilasters, 83 ft. 6 ins. high, and entablature 20 ft. high, or nearly double the height of the Pantheon portico (p. 153), surmounted by a semicircular barrel vault, coffered, gilded, and frescoed, 150 ft. above the marble pavement. The four stupendous piers (60 ft. square) which uphold the dome have immense statues 16 ft. high, and the impression on gazing into the vast internal cupola, 335 ft. high, with its coloured frescoes and mosaics, is awe-inspiring and sublime. The planning of the supports of the dome and its four pendentives is in marked contrast with that of S. Paul's, London (p. 724[1]), with its eight piers. The Throne of S. Peter, which occupies the western apse, is the work of Bernini, as is also the magnificent Baldachino (p. 590 B), 100 ft. high, covering the High Altar, which stands over the alleged tomb of S. Peter in the crypt, beneath the dome.

The exterior (pp. 585 A, 589 C, 590 A), roughly executed in travertine stone, has an immense Order of Corinthian pilasters with entablature and attic, carried round the entire building, of the following dimensions : podium 18 ft., Corinthian columns and pilasters 90 ft. 9 ins. (diameter 9 ft.), entablature 20 ft., attic and balustrade 38 ft. 6 ins., which, excluding the statues, 20 ft. high, gives a total height of 167 ft. 3 ins., or more than half as high again as the façade of S. Paul's Cathedral (p. 723). The gigantic scale of this building can best be realised by comparison with Trajan's Column, Rome (p. 182), which is 97 ft. 7 ins. high, with a diameter of 12 ft. 2 ins., and is placed on a pedestal 18 ft. high. Thus the countless half-columns and pilasters which encircle the great Cathedral are actually only about 7 ft. less in height than the single column of Trajan. In no other building has an Order of such immense size been used. If Michelangelo's design for a portico of free-standing columns had been carried out, it would have been one of the most impressive features in all Christendom.

The great dome (pp. 585, 586 A, C, 589), formed of two shells of masonry, nearly equals that of the Pantheon in diameter, but Michelangelo set himself a very difficult problem, inasmuch as the base of his dome is nearly 250 ft.

from the pavement, and depends for support only on four massive piers, instead of on a continuous circular wall. No less than ten iron chains at the base have been inserted at different times to prevent the dome from spreading. Although the dome, with the lantern, is 450 ft. in height—more than twice that of the towers of Westminster Abbey—its dominating effect is impaired externally, except from a distance, by Maderna's lengthened nave and additional portico, which latter is not only over 167 ft. high, but is also as much as 450 ft. from the centre of the crossing, and consequently hides the lower part of the dome from the near spectator. The Order round the drum, 50 ft. high, might well have been on a larger scale, and it might have gained in impressiveness, had it been connected by scrolls with the attic above, as designed by Michelangelo. It is in effect far less pleasing than the colonnaded treatment of the dome of S. Paul's (pp. 543 B, 723). In spite of these conflicting elements in the design, the dome of S. Peter's is the greatest creation of the Renaissance, and a dominating feature in all views of Rome.

Lantern, dome, drum, balustrades, and statues, all in turn piled above the tower-like pilasters of the encircling walls, and even partly obscured by the monumental portico, are awe-inspiring in their massive grandeur, and in themselves make up a monument of cunningly contrived parts. Externally, however, S. Peter's owes half its majesty to the manner in which it sits enthroned above its vast entrance piazza (650 ft. wide), with its grouped fountains and central obelisk, which is guarded by those noble colonnades whose proportions are on such a generous scale that they are not dwarfed even by the huge Order of the façade on which they abut. No other city has accorded such a wide-swept approach to its Cathedral Church, no other architect could have conceived a design of greater nobility; this colonnade-encircled piazza of Bernini is, if one may say so, the greatest of all atriums before the greatest of all churches in Christendom.

This remarkable building may be compared with some other notable cathedrals:

	S. Peter, Rome.	Milan Cathedral.	S. Paul, London.	S. Sophia, Constantinople.	Notre Dame, Paris.
Area in sq. yds.	25,230	13,984	9,336	11,467	7,483
Length in feet	710	515	510	353	460
		Pantheon			Florence
Diam. of dome in feet	137½	142½	109	107	138½

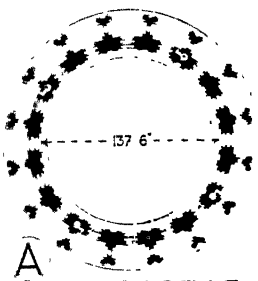
DOMENICO FONTANA (A.D. 1543–1607) was one of the later Roman architects who designed in the Baroque style of the seventeenth century (pp. 545, 565).

The **Palazzo del Laterano, Rome** (A.D. 1586) (p. 34 B), was erected by Fontana on the site of the former Palace, and after being an orphan asylum it was turned into a museum in A.D. 1843. The buildings are arranged round a court, and the façade has a simple and somewhat tame astylar treatment.

The Palazzo del Quirinale (A.D. 1574), the Vatican Palace (portions including the Library A.D. 1588), the Chapel of Sixtus V (A.D. 1585) in S. Maria Maggiore, and the North Transept (A.D. 1586) of S. Giovanni in Laterano (p. 34 B) are among Fontana's other works.

CARLO MADERNA (A.D. 1556–1629) was the architect of the Palazzo Borghese (A.D. 1590), the Palazzo Barberini (A.D. 1626), and S Maria della Vittoria (A.D. 1605); he also lengthened the nave of S. Peter (p. 582).

GIOVANNI BERNINI (A.D. 1589–1680), a Baroque architect, most famous as the author of the colonnaded Piazza of S. Peter (A.D. 1655–67),

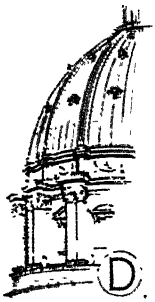


A
PLAN OF PERISTYLE

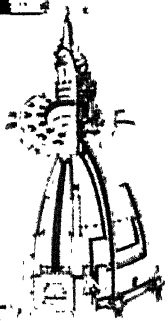


B
PLAN OF DOME
AT b b

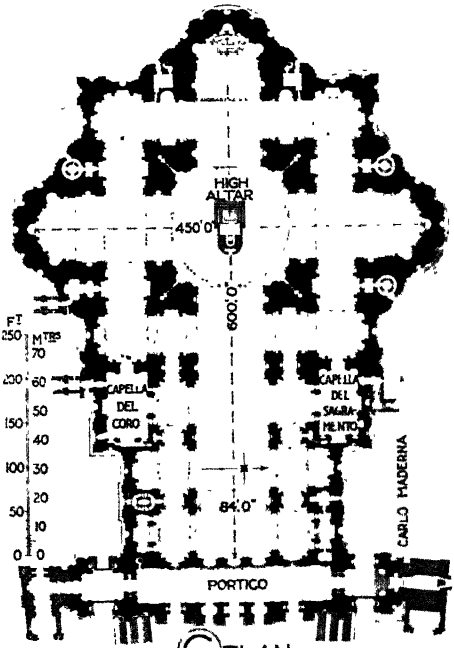
C ELEVATION OF EAST FACADE



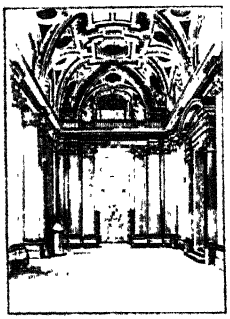
D
PERISTYLE



E
DOME
CONSTRUCTION



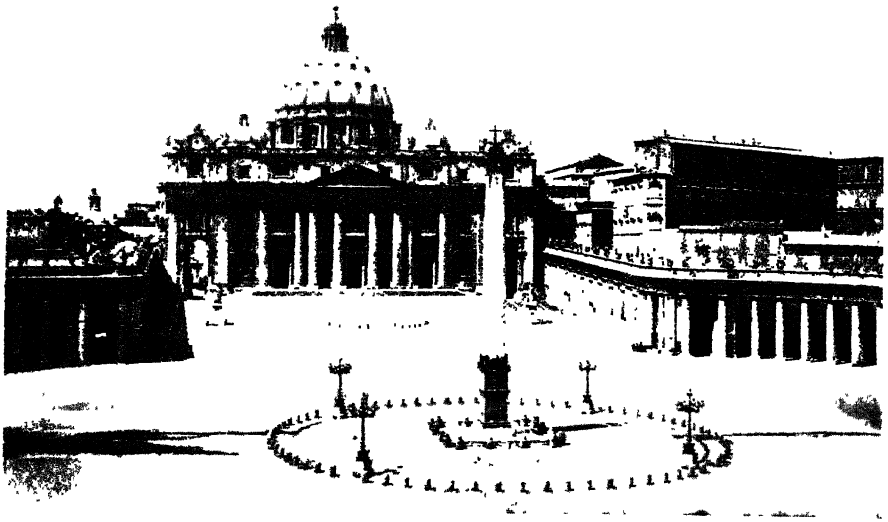
G PLAN



F
THE PORTICO
LOOKING S.



H
APSE OF
S. TRANSEPT

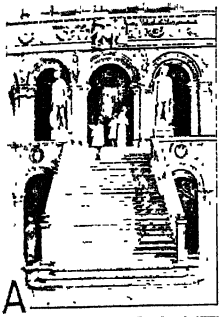


A. S. Peter, Rome, from the Piazza

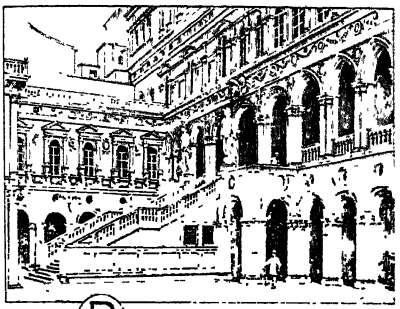


B. S. Peter, Rome: Interior

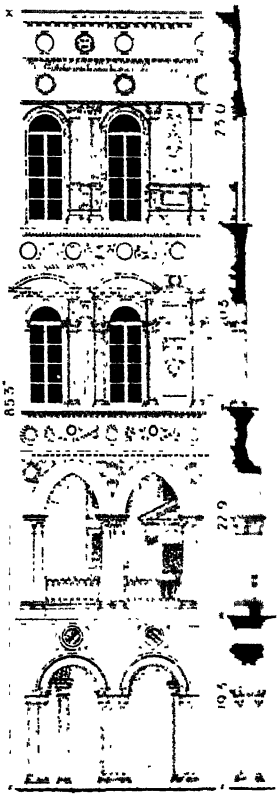
THE DOGE'S PALACE: VENICE

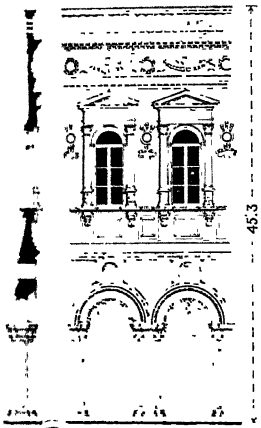


A SCALA DEI GIGANTI

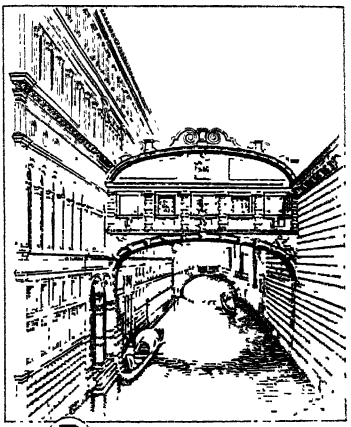


B GRAND CORTILE



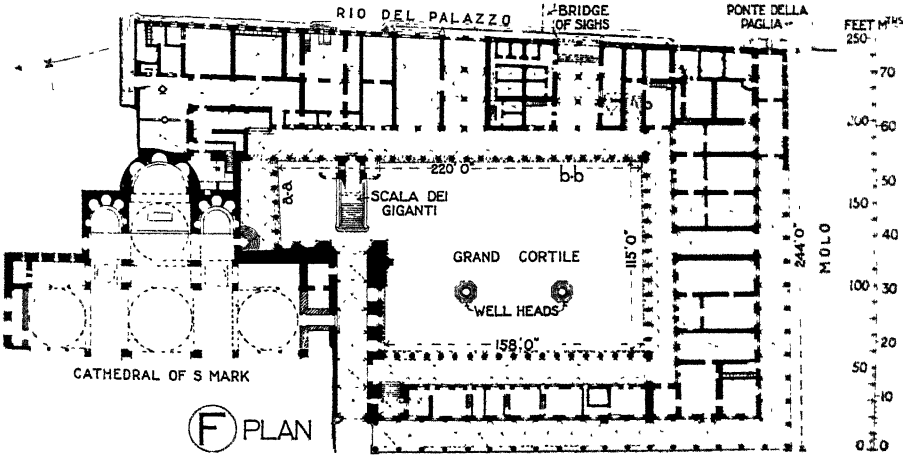


C BAYS AT a-a



D BRIDGE OF SIGHS

E BAYS AT b-b



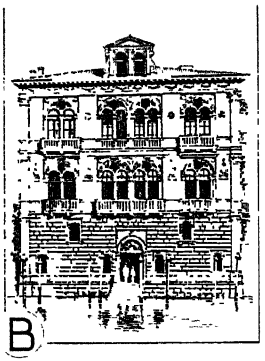
F PLAN

PAL. PESARO VENICE

PAL. CORNER SPINELLI: VENICE

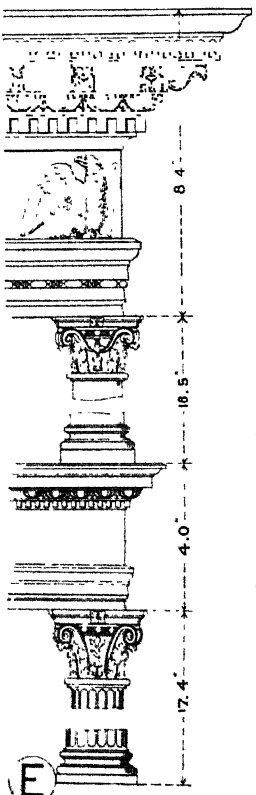
PAL. CORNER DELLA CA' GRANDE: VENICE


A

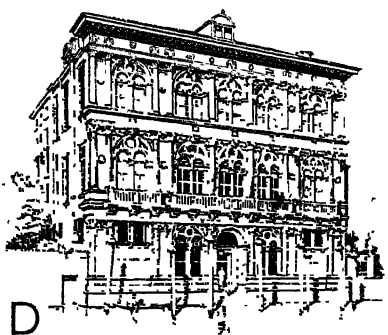

B

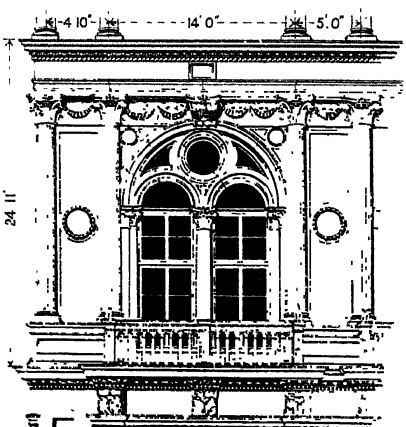

C

PALAZZO VENDRAMINI: VENICE

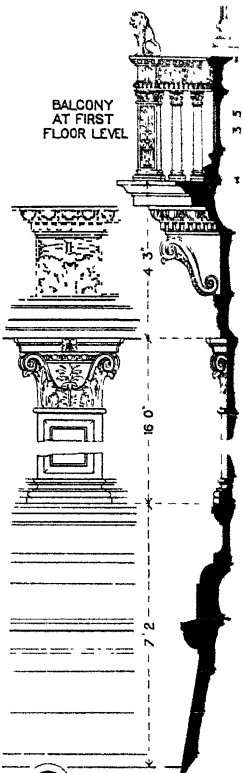


E ORDERS TO FIRST & SECND FLOORS


D EXTERIOR FROM GRAND CANAL



F FIRST FLOOR WINDOW



G ORDER TO GROUND FLOOR

also designed the Fountains in the Piazza Barberini, the Piazza di Spagna, and the Piazza Navona, the Scala Regia in the Vatican and S. Andrea del Quirinale, Rome (A.D. 1678). The Palazzo Barberini, Rome, which had been commenced (A.D. 1626) by Carlo Maderna, and was given a façade by Bernini in A.D. 1629, and the Palazzo Odescalchi, Rome (A.D. 1665), are worthy of study.

FRANCESCO BORROMINI (A.D. 1599–1667) was the architect of S. Agnese, Rome (A.D. 1652), with a Greek cross plan and curved façade, and of S. Carlo alle Quattro Fontane, Rome (A.D. 1640–67), with a clever plan on a corner site.

ALESSANDRO GALILEI (A.D. 1691–1737) designed the principal façade of S. Giovanni in Laterano, Rome (A.D. 1734), with its open Loggia, from which the pope at one time pronounced his benediction.

FERDINANDO FUGA (A.D. 1699–1780) designed the portico of S. Maria Maggiore, Rome (A.D. 1743), and probably also the famous Fontana di Trevi, Rome (A.D. 1735).

The Baroque style in Rome has already been referred to (p. 565).

VENICE

PIETRO LOMBARDO (A.D. 1435–1515) was one of a family who impressed their personality on the architecture of the sea-girt city.

The **Doge's Palace, Venice**, commenced in the Mediæval period (p. 504), was continued at this time. The Cortile (A.D. 1486) (p. 591), by Ant. Rizzi, was continued (A.D. 1499–1511) by Pietro Lombardo, carried on (A.D. 1520) by Bergamasco, and completed in Renaissance times (A.D. 1550) by Scarpagnino. The Cortile is a free and beautiful example of early Renaissance, with arcaded façades, and with the famous Scala dei Giganti (Giants' Staircase), flanked by Sansovino's figures of Mars and Neptune (p. 591 A, B). The cortile façades vary picturesquely in design, and the pointed arch, although an eminently Gothic feature, is retained in this early Renaissance building (p. 591 B, C, E). The cortile forms an interesting chapter in the history of the wonderful Ducal Palace equally famous for its external Gothic arcades (p. 506) and its council chambers, with their elaborate chimney-pieces (p. 611 J) and with walls and ceilings enriched with paintings by Veronese and Tintoretto. The **Bridge of Sighs** (p. 591 D), which connects the Doge's Palace and the prison, is a salient external feature, with its elliptical arch, rusticated pilasters, and heraldic devices.

The **Palazzo Vendramini, Venice** (A.D. 1481) (p. 592), by Pietro Lombardo, is the earliest example in the city of an appliqué façade, i.e. one in which the architectural treatment stops at the angles. The straight façade (p. 592 D) was governed by the necessity of lining up with the water-way of the Grand Canal. The superimposed attached columns in each storey (p. 592 E), the semicircular window arches (p. 592 F), and the beautiful little balconies (p. 592 G) at the first-floor level are of graceful outline.

The **Palazzo Corner Spinelli, Venice** (A.D. 1480) (p. 592 B), probably designed by one of the Lombardi family, with its rusticated basements and symmetrical arrangement of windows, is a delightful example of the early Renaissance.

S. Maria dei Miracoli, Venice (A.D. 1480) (p. 595), by Pietro Lombardo, is a marvel of marble work, both within and without. This miniature church has an aisleless nave crowned by a semicircular roof with gilded panels, and the choir over the sacristy is approached by wide steps, flanked by marble balustrades (p. 612 H), and with beautiful pierced screen-work in the sanc-

tuary. The walls are faced internally and externally with coloured marbles. The exterior (p. 595 A), although clothing a one-storeyed structure, is designed with two stages of superimposed pilasters, the upper as a blind arcade recalling Mediæval treatment, and the whole crowned with a semicircular roof and pediment, a feature which also occurs at S. Zaccaria and the Scuola di S. Marco, and was probably borrowed from the Byzantines, with whom it represented the exterior of their vaults.

S. Zaccaria, Venice (A.D. 1456–1515), and **S. Giobbe, Venice** (A.D. 1451–93), are other transition examples which have many interesting features, and show the Lombardi influence.

S. Salvatore, Venice (A.D. 1530), by Tullio Lombardo, a son of the famous Pietro, has a plan obviously derived from S. Mark's.

The Scuola di S. Marco, Venice (A.D. 1485–95) (p. 564 B), has a façade by Martino Lombardo, probably founded on that of S. Mark. The ground storey has Corinthian pilasters and some curious perspective reliefs of colonnades, and a doorway with semicircular pediment and acroterion figures, while the upper part of the façade has windows and semicircular pediments, arranged to emphasise the principal doorway beneath.

S. Giorgio dei Greci, Venice (A.D. 1538), by the Lombardi, is a graceful little building of the early period. It has an aisleless plan (p. 595 G), somewhat resembling S. Maria dei Miracoli, and a sanctuary with three small apses. A dome is schemed centrally over the nave (p. 595 H), while the exterior (p. 595 F) has a somewhat unusual treatment, terminating in three pediments, and the group is completed towards the Canal with a lofty campanile (A.D. 1587).

JACOPO SANSOVINO (A.D. 1486–1570), after studying in Rome as a sculptor, settled in Venice and designed many important buildings.

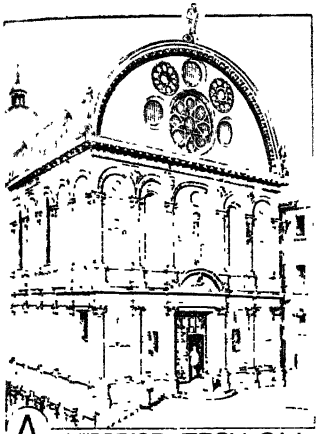
The Library of S. Mark, Venice (A.D. 1536) (p. 596), designed by Sansovino, is majestic in the matured Renaissance style, and has arcades (p. 596 A, F) with Doric columns and a " piano nobile " with Ionic columns supporting an unusual entablature (p. 596 B, D), which is over one-third the height of the Order, and in which the deep frieze has windows separated by cherubs holding festoons of boldly carved fruit and flowers. The continuation of the design one storey higher round the Piazza of S. Mark was executed in A.D. 1584 by Scamozzi.

The Zecca, Venice (A.D. 1536), designed by Sansovino, has a peculiar treatment of column rustication, giving a severe appearance in keeping with its purpose as a mint.

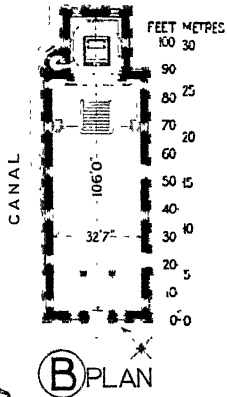
The Palazzo Corner della Ca' Grande, Venice (A.D. 1532) (p. 592 C), by Sansovino, is a palace design of excellent proportions on an imposing site fronting the Grand Canal. The two lower storeys are rusticated with three central openings flanked by windows in two tiers, while the two upper storeys are faced with the Ionic and Corinthian Orders, and the walls are pierced with semicircular headed windows.

ANDREA PALLADIO (A.D. 1518–80), the greatest architect of the later Renaissance, carried out his principal designs in his native city of Vicenza, to which he thus added the lustre of his fame. The drawings in his published work " I quattro libri dell' Architettura " are not only valuable as records of buildings which no longer exist, but also as showing how assiduously he studied and measured the buildings of antiquity during the years that he spent in Rome. The result of his Classical research can be traced in his designs for buildings both in Venice and Vicenza. They were

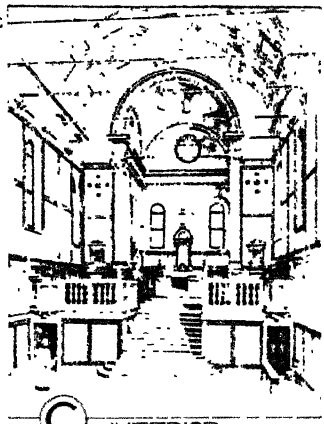
S. MARIA DEI MIRACOLI : VENICE



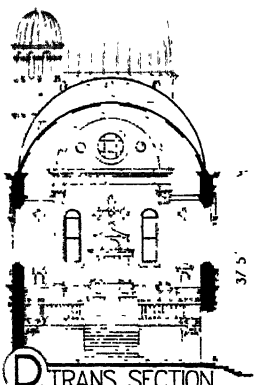
A EXTERIOR FROM S.W.



B PLAN



C INTERIOR LOOKING INTO SANCTUARY



D TRANS SECTION

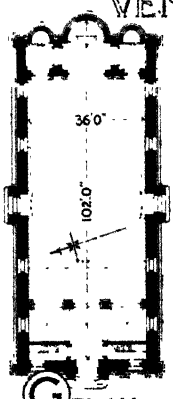


E LONGITUDINAL SECTION

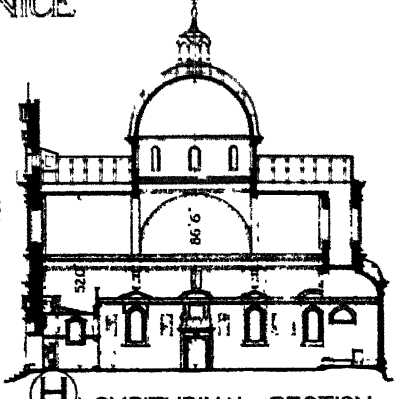
S. GIORGIO DEI VENICE



F EXTERIOR FROM N.W.

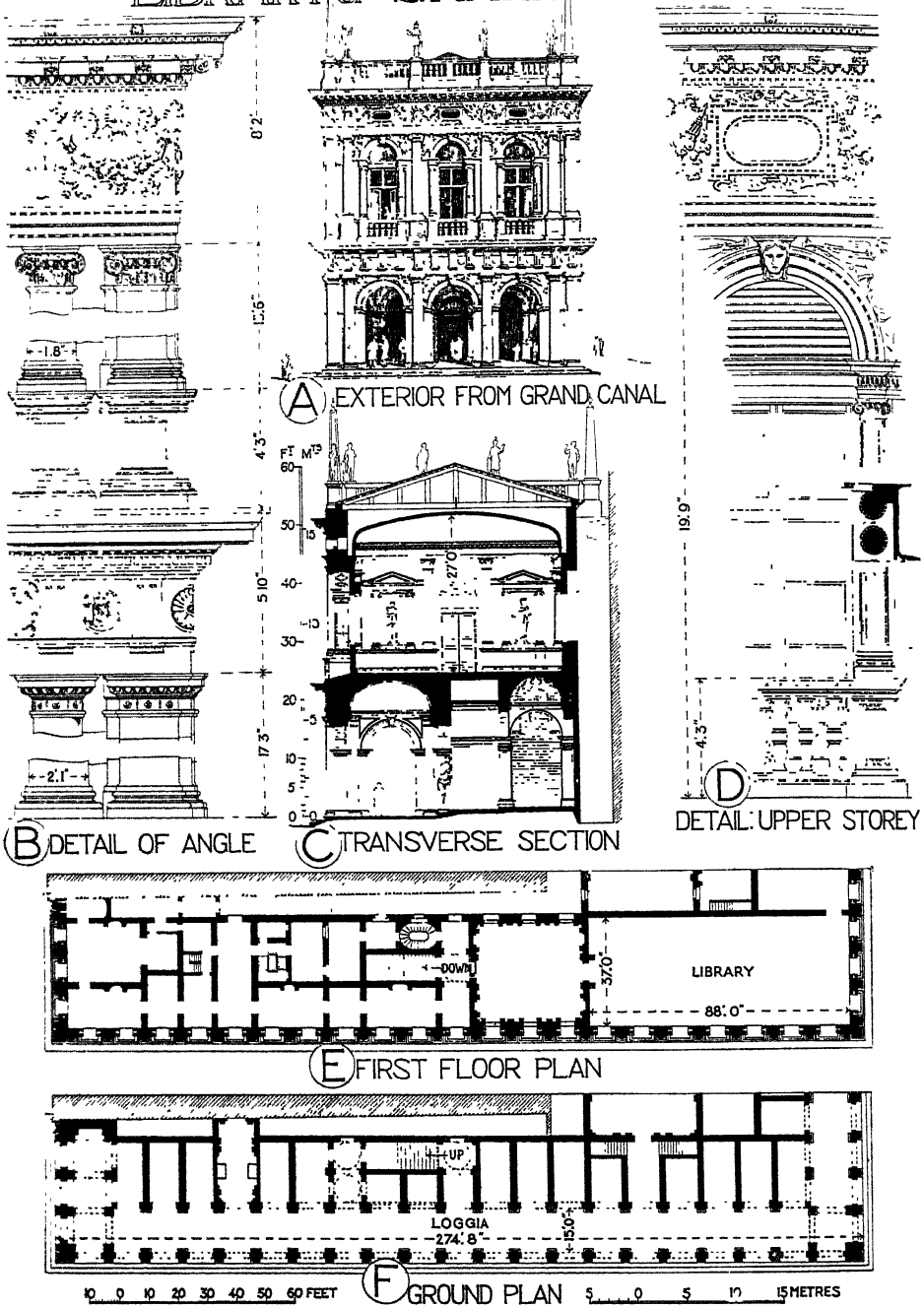


G PLAN



H LONGITUDINAL SECTION

LIBRARY OF S. MARK: VENICE



A EXTERIOR FROM GRAND CANAL

B DETAIL OF ANGLE

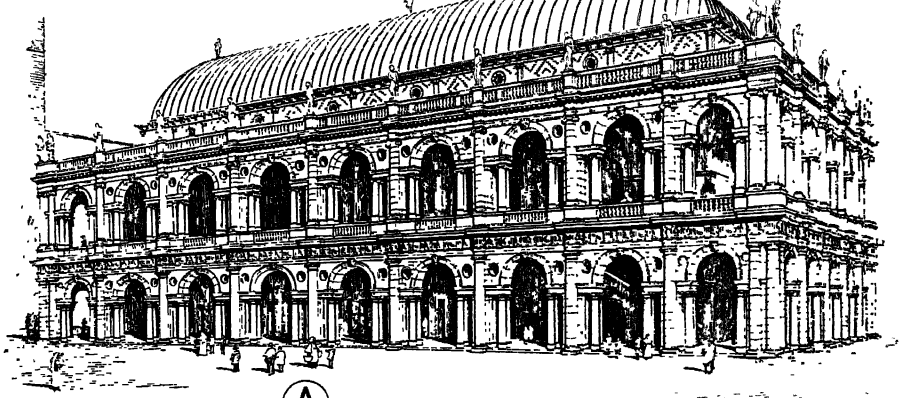
C TRANSVERSE SECTION

D DETAIL: UPPER STOREY

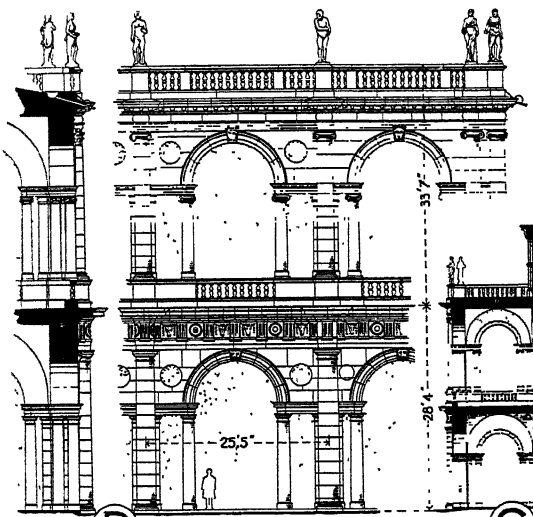
E FIRST FLOOR PLAN

F GROUND PLAN

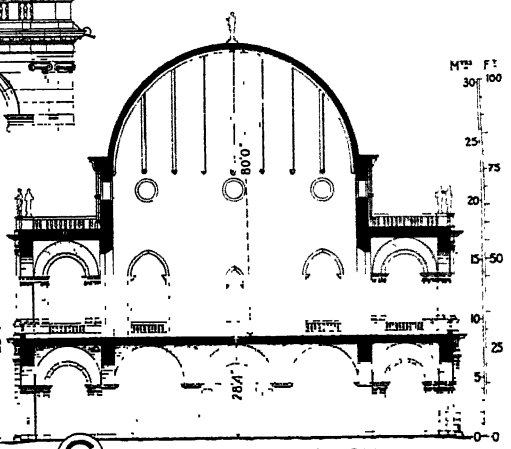
THE BASILICA: VICENZA



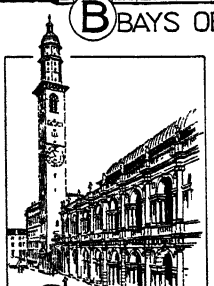
A EXTERIOR FROM PIAZZA



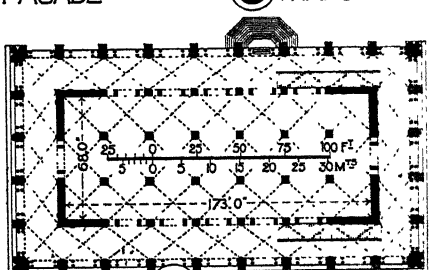
B BAYS OF FACADE



C TRANSVERSE SECTION



D SKETCH

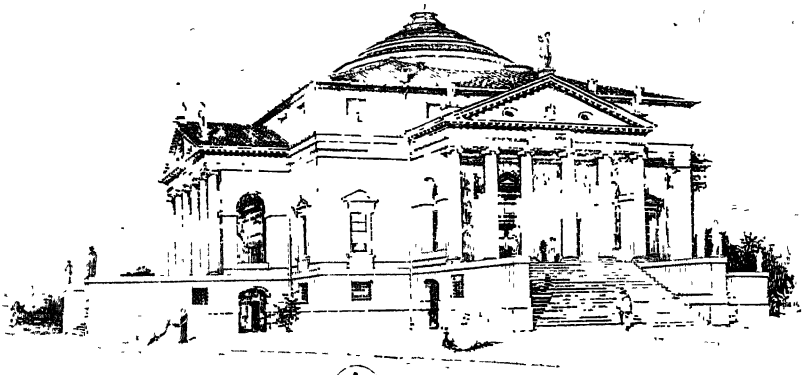


E PLAN

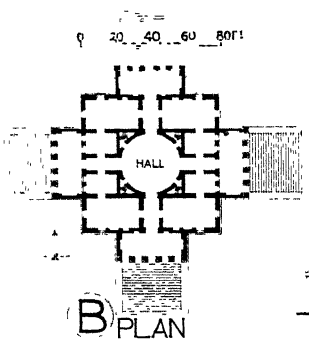


F UPPER ARCADE

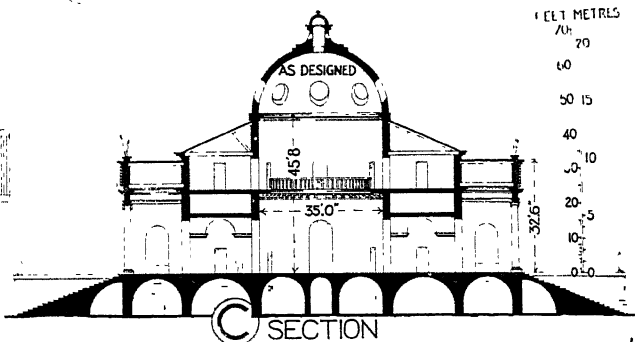
VILLA CAPRA: VICENZA



A EXTERIOR

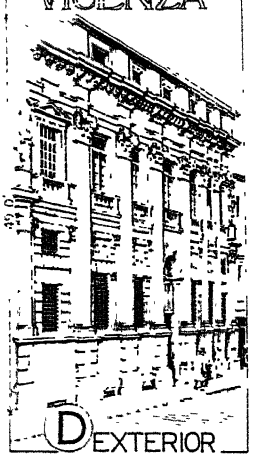


B PLAN



C SECTION

PALAZZO VALMARANA VICENZA

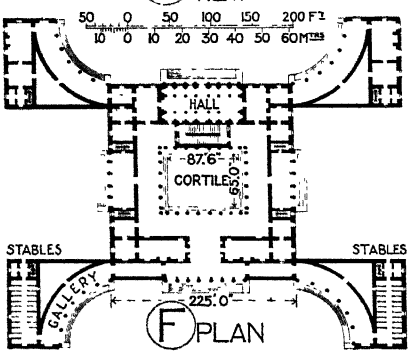


D EXTERIOR

HOUSE FOR SIG. MOCENIGO ON THE BRENTA (NOT EXECUTED)

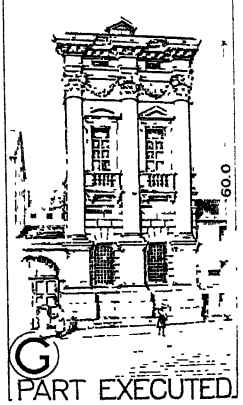


E VIEW



F PLAN

CASA DEL DIAVOLO VICENZA



G PART EXECUTED

unfortunately mostly in mean materials, such as brick faced with stucco, and the success he achieved is an instance of how genius can produce works of art out of commonplace materials. Many of his buildings were never completed, but the publication of the designs in his book, first issued in Venice in A.D. 1570, and since published in every country in Europe, has had a far greater influence than have his buildings on architecture ; especially in England, where Palladio had an ardent disciple in Inigo Jones (p. 702), who published an annotated edition of his book.

The **Palazzo Thiene** (A.D. 1556), **Palazzo Valmarana** (A.D. 1566) (p. 598 D), **Palazzo Chiericati** (A.D. 1560), **Palazzo Barbarano** (A.D. 1570), **Palazzo Capitanio** (A.D. 1571), and **Casa del Diavolo, Vicenza** (p. 598 G), are some of his palace buildings in Vicenza, exhibiting rusticated lower storeys supporting an Order often carried through the height of the building to give unity of design.

The **Teatro Olimpico, Vicenza** (A.D. 1580), with the permanent stage built in perspective, is an unusual and interesting building, designed by Palladio but completed by Scamozzi.

The **Basilica, Vicenza** (A.D. 1549) (p. 597), is famous for its Renaissance arcades added by Palladio to the Mediæval structure erected in A.D. 1444. The plan (p. 597 E) shows the large Mediæval hall, 173 ft. by 68 ft., with its supporting piers which gave the lines for the Renaissance piers of the surrounding arcades, while the transverse section (p. 597 C) shows the upper floor, which regulated the height of the surrounding Orders. The arcades showing the cross-vaults and the twin columns supporting the arches are very impressive (p. 597 F). Palladio had to adjust the arcades as an outer husk to the width and height of the Gothic building. The end bays on each façade were unrestricted in width, so Palladio made them narrower in order to give an effect of strength at the angles, as had been previously done by the Greeks, e.g. the Parthenon (p. 71). These arcades (p. 597 B), in fine hard stone which has beautifully weathered, consist of superimposed Doric and Ionic Orders which, under the main entablature, frame intervening arches supported on smaller free-standing twin columns, and there are circular openings in the spandrels. This grouping and combination of columns and arches has been termed the " Palladian motif," and is exceedingly effective, especially when seen in conjunction with the slender campanile alongside (p. 597 D). The idea was probably derived from the Gothic arcades of the Town Hall at Padua, or from the arcades surrounding the Basilica Julia, Rome.

The **Villa Capra, Vicenza** (p. 598), known also as the Rotonda, with its exaggerated application of Classic features, is a square building with pillared portico on each face, leading to a central circular hall of which only the low dome appears externally above the tiled roof, which is hipped from the angles of the main building. This design was an important departure, and it was utilised by Lord Burlington at Chiswick (p. 734) and by Colin Campbell at Mereworth Castle, Kent (p. 737 G), and has often been copied both in England and on the Continent.

S. Giorgio Maggiore, Venice (A.D. 1560) (p. 601), has a cruciform plan with apsidal transepts. The interior has piers faced with Corinthian columns and the façade, completed by Scamozzi (A.D. 1575), shows the adaptation of Classic Orders to a church of the basilican plan. The church, with pedimented façade, dome, turrets, and campanile, stands picturesquely on an island framed in by the waters of the Lagoon.

Il Redentore, Venice (A.D. 1576) (p. 601), is similar in plan, but there are

side chapels in lieu of aisles. In the façade the principal and subsidiary Orders start from the same base, and the aisles are fronted with half-pediments. This church shows how impossible it is to judge a building from a geometrical drawing only, for in a near view (p. 601 J) the dome over the crossing is dwarfed by the long arm of the nave, as in S. Peter, Rome.

S. Francesco della Vigna, Venice (A.D. 1534–62), by Sansovino, has a façade (A.D. 1562) by Palladio, resembling that of S. Giorgio Maggiore.

SANMICHELI (A.D. 1484–1559) was distinguished as the originator of a new system of fortifications. The gateways of Verona are excellent instances of his power of giving distinctive character by bold and original treatment of rustication.

The **Palazzo Pompei, Verona** (A.D. 1530) (p. 602), has a characteristic plan on axial lines, with a central entrance leading to a cortile. A rusticated basement with semicircular windows supports the " piano nobile," with its fluted Doric columns, semicircular windows, and carved masks on keystones (p. 602 C).

The **Palazzo Bevilacqua, Verona** (A.D. 1527) (p. 602 J), is a pleasing variation on the Palazzo Pompei. The ground storey has rusticated pilasters; the " piano nobile " has a balustraded balcony, and there are Corinthian half-columns grouped in pairs which also include an upper storey with rectangular windows and an imposing entablature.

The **Palazzo dei Diamanti, Verona** (A.D. 1582) (p. 602 G), has a façade obviously influenced by Sanmicheli, with faceted rustications, whence its name.

The **Palazzo Grimani, Venice** (A.D. 1549) (p. 603), designed by Sanmicheli, forms an imposing mass towards the Grand Canal. The plan (p. 603 E) is most cleverly contrived on an irregular island site with three large openings to the columned vestibule and long cortile, off which are the staircases. The façade (p. 603 C), 90 ft. long and 97 ft. high, has three Orders of superimposed Corinthian pilasters, the lower comprising two storeys and the whole bound together with a striking continuous balcony from end to end of the façade. The crowning cornice, 8 ft. 8 ins. high, is proportioned to the whole façade.

The **Gran Guardia Vecchia, Verona** (A.D. 1609) (p. 602), is perhaps one of Sanmicheli's most successful designs. The façade, over 285 ft. long, has a rusticated ground storey with semicircular arches, and a " piano nobile," with a stately line of coupled Doric columns, surmounted by an entablature, while the centre is emphasised by an upper storey. The details of this Order (p. 605 F) are exceedingly refined, and the whole façade is a good example of restrained architectural expression.

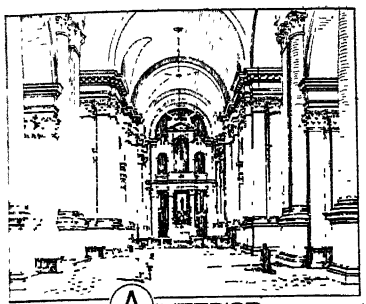
FRA GIOCONDO (A.D. 1435–1515), a native of Verona, seems to have been associated with Sanmicheli and probably influenced him.

The **Palazzo del Consiglio, Verona** (A.D. 1476) (p. 602 H), is notable for the arcade modelled on that of the Ospedale degli Innocenti, Florence, and for the coloured " sgraffito " work of the façade.

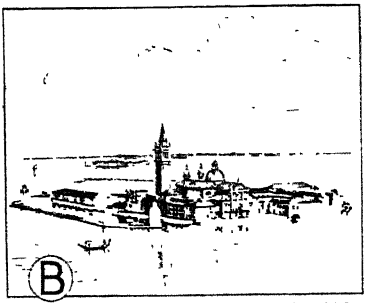
LONGHENA (A.D. 1604–75) was a Roman architect who practised chiefly in Venice, and designed the famous church of the Salute.

S. Maria della Salute, Venice (A.D. 1632) (p. 604), groups up most beautifully with the Dogana or Custom House on the Grand Canal, and in itself is sufficient to stamp the architect as a man of genius. The church is octagonal in form, with a central space, 65 ft. in diameter, with Corinthian columns in the angles (p. 604 B), and the spacious surrounding aisle and radiating chapels make it one of the largest of aisled polygonal churches. The circular dome with high drum is connected to the outer walls by scrolled buttresses

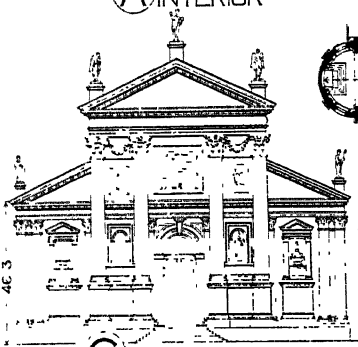
S. GIORGIO MAGGIORE : VENICE



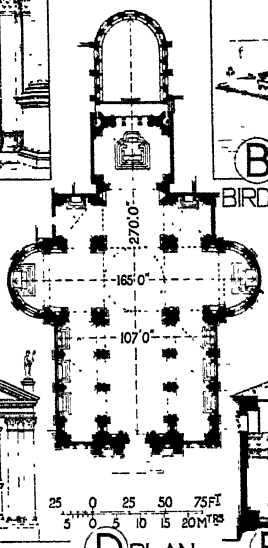
A INTERIOR



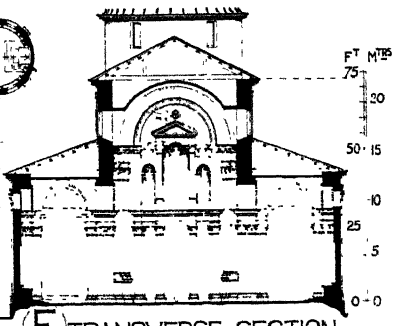
B BIRDS EYE VIEW FROM CANAL



C THE FACADE

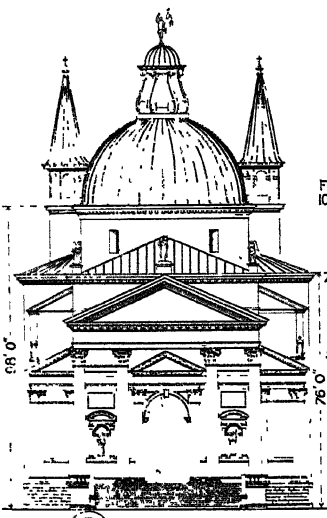


D PLAN

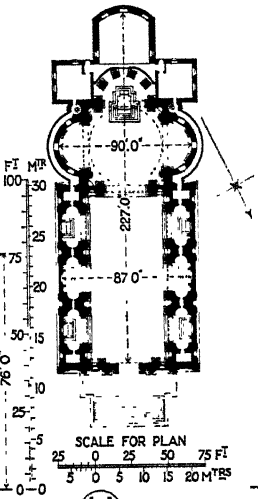


E TRANSVERSE SECTION

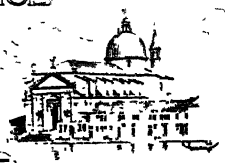
IL REDENTORE : VENICE



G THE FACADE



H PLAN

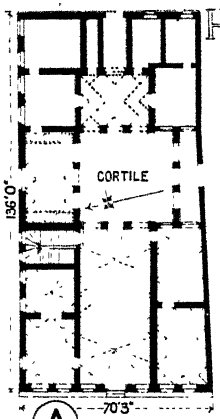


F VIEW FROM CANAL

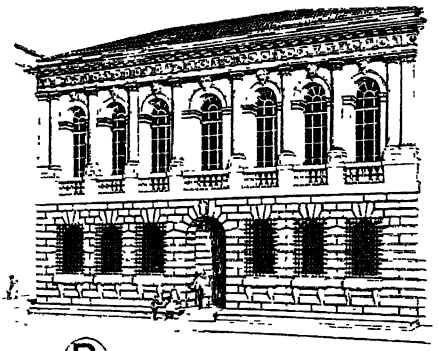


J PERSPECTIVE VIEW

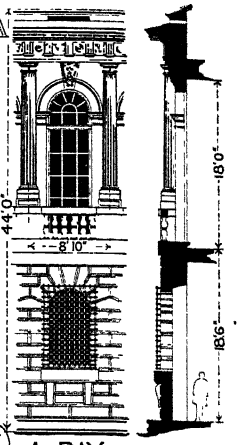
PALAZZO POMPEI: VERONA



A PLAN

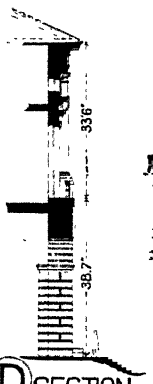


B EXTERIOR FROM W.

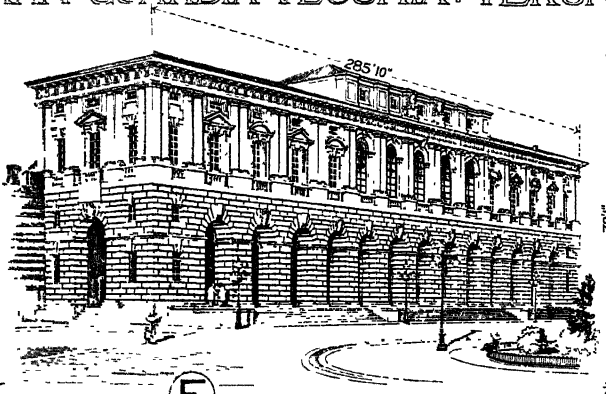


C A BAY

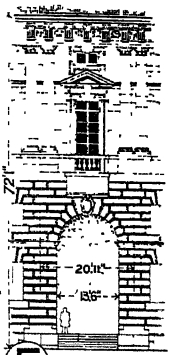
GRAN GUARDIA VECCHIA: VERONA



D SECTION

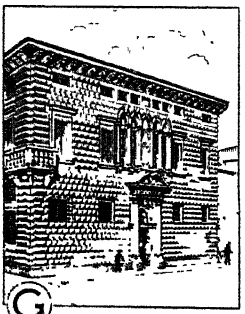


E VIEW FROM E.

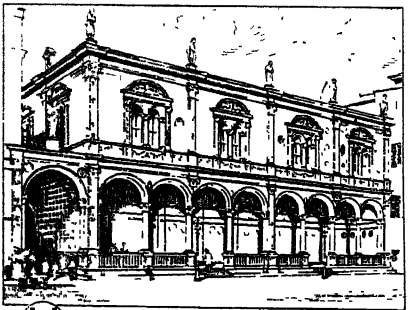


F SIDE BAY

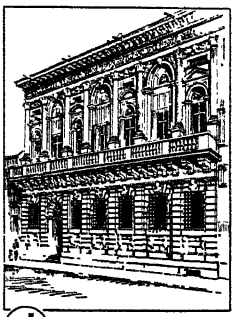
OTHER PALACES AT VERONA



G PAL. DEI DIAMANTI

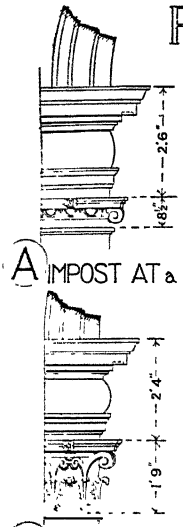


H PALAZZO DEL CONSIGLIO



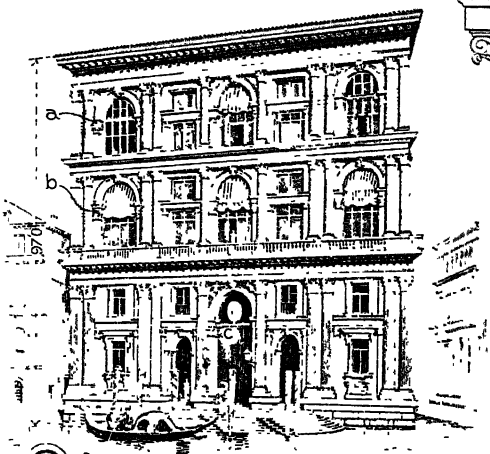
J PAL. BEVILACQUA

PAL. GRIMANI: VENICE

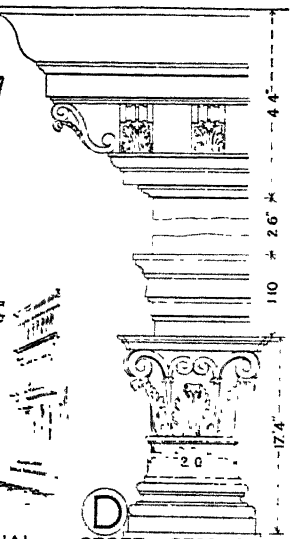


A IMPOST AT a

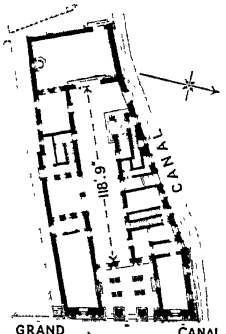
B IMPOST AT b



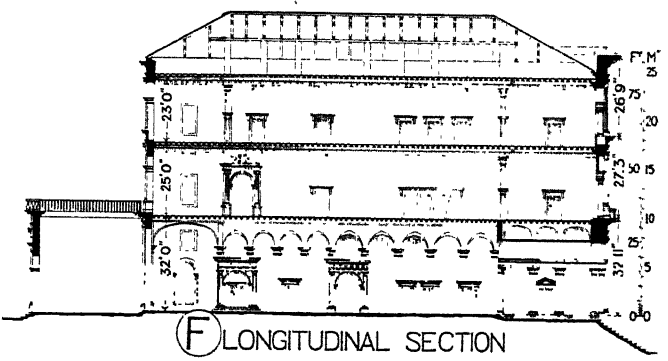
C EXTERIOR FROM GRAND CANAL



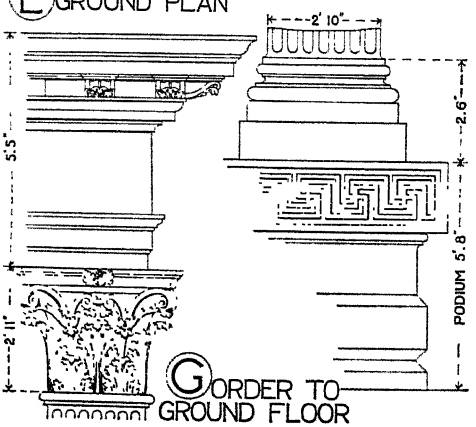
D ORDER TO SECOND FLR



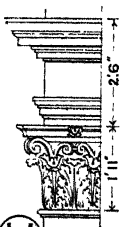
E GROUND PLAN



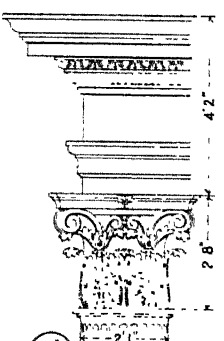
F LONGITUDINAL SECTION



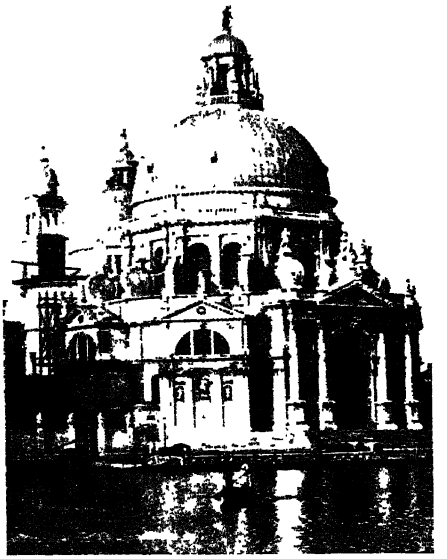
G ORDER TO GROUND FLOOR



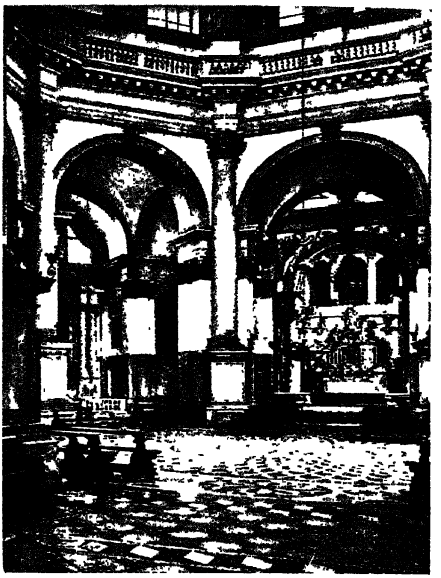
H IMPOST AT c



J ORDER TO FIRST FLOOR

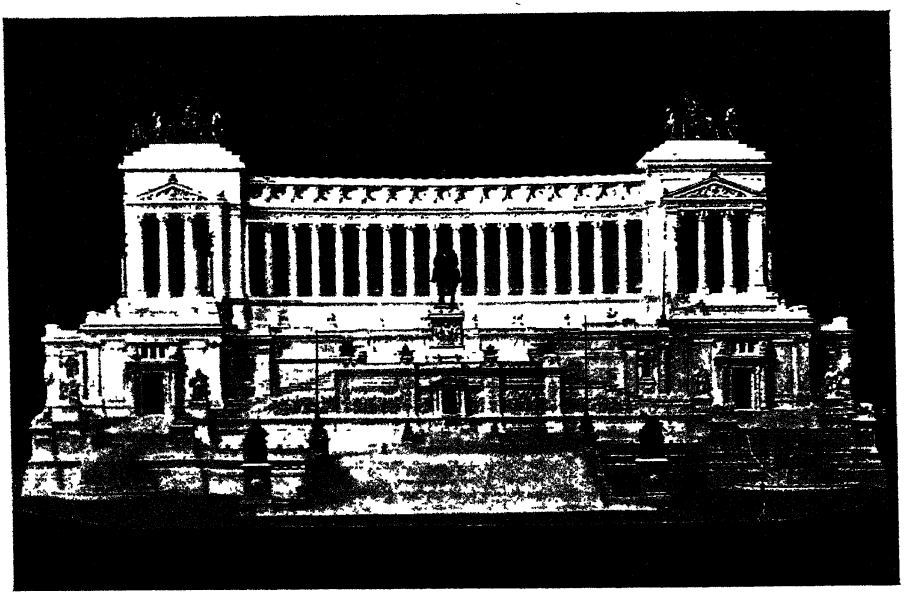


A. Exterior

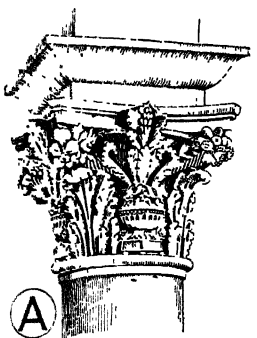


B. Interior

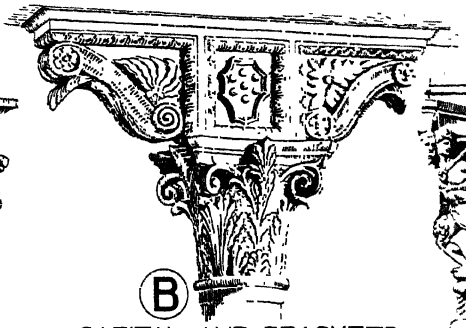
S. Maria della Salute, Venice



C. Monument to Vittorio Emanuele, Rome



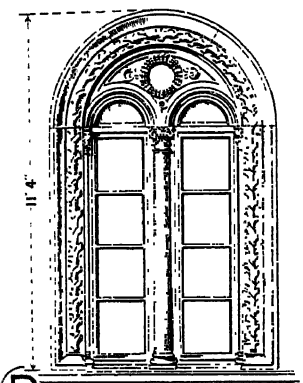
A CAPITAL IN CORTILE
PAL. GONDI: FLORENCE



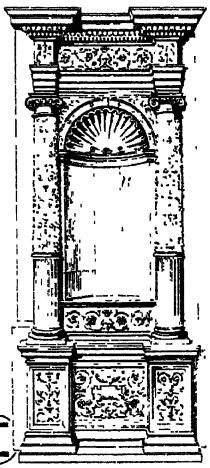
B CAPITAL AND BRACKETS
THE BADIA DI FIESOLE: NR FLORENCE



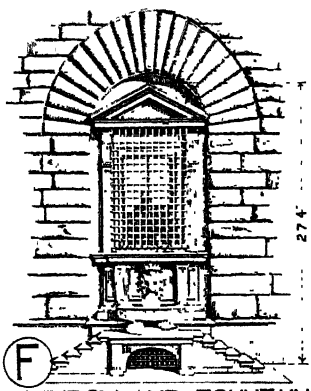
C PILASTER CAPITAL
S SPIRITO: FLORENCE



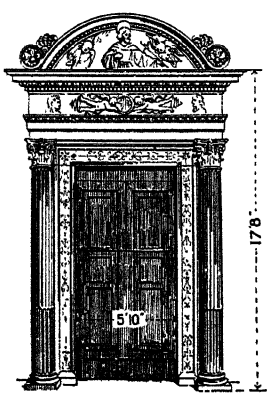
D WINDOW IN CORTILE
PAL. QUARATESI: FLORENCE



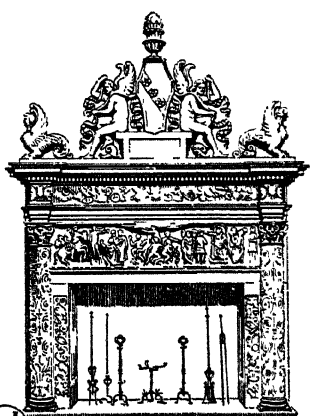
E NICHE: NAT^L MUS: FLORENCE



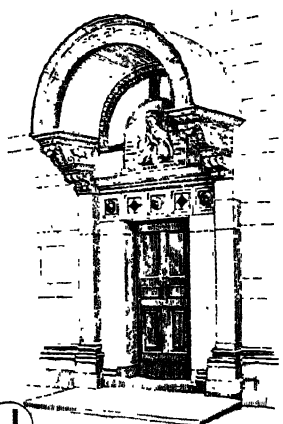
F WINDOW AND FOUNTAIN
PALAZZO PITTI: FLORENCE



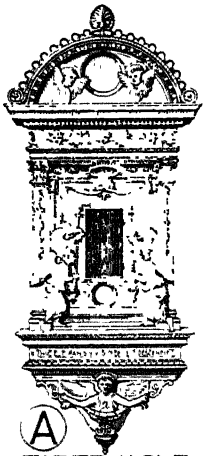
G DOORWAY
S. CROCE: FLORENCE



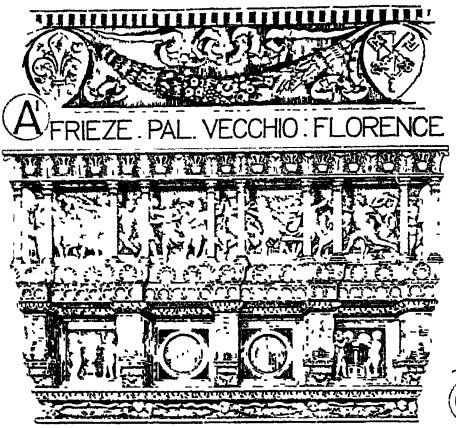
H CHIMNEY PIECE
NATIONAL MUS: FLORENCE



J PORCH
S. ALESSANDRO: LUCCA

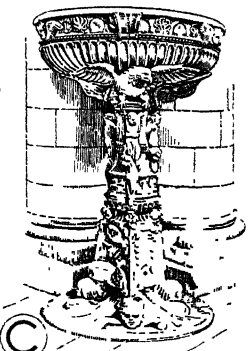


A TABERNACLE S. CROCE: FLORENCE

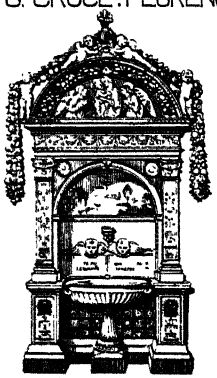


A FRIEZE. PAL. VECCHIO: FLORENCE

B CANTORIA (SINGING GALLERY) MUSEUM OF S MARIA DEL FIORE FLORENCE



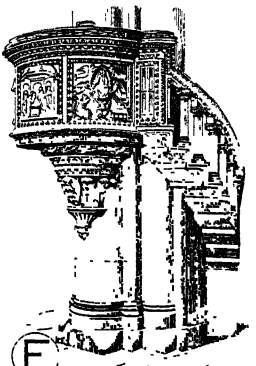
C HOLY WATER STOUP SIENA CATHEDRAL



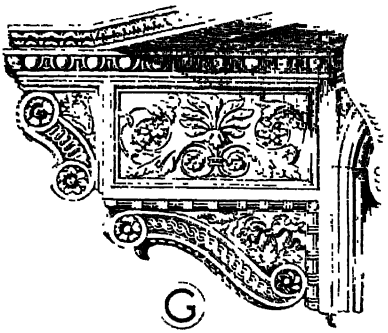
D 'LAVABO' S. M. NOVELLA FLORENCE



E ALTAR-PIECE: S. CROCE: FLORENCE



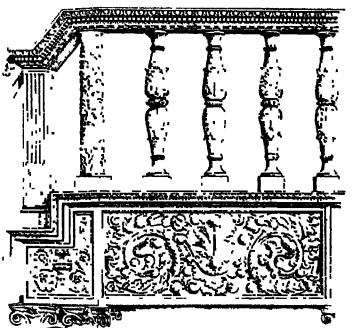
F PULPIT: S. M. NOVELLA FLORENCE



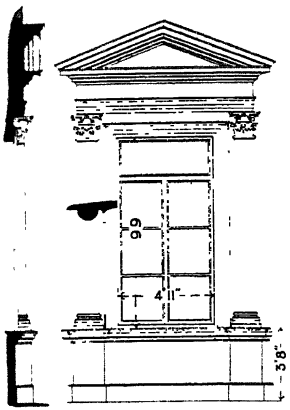
G BRACKET TO PULPIT S. CROCE: FLORENCE



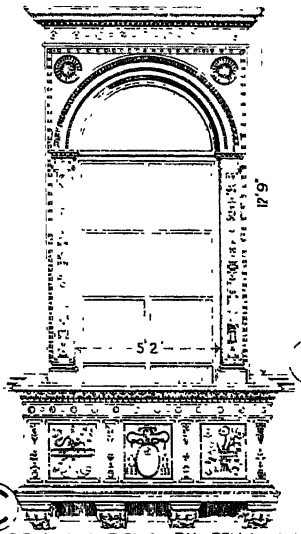
H RELI- QUARY S.SALVA- DORE D' OGNISSANTI: FLORENCE.



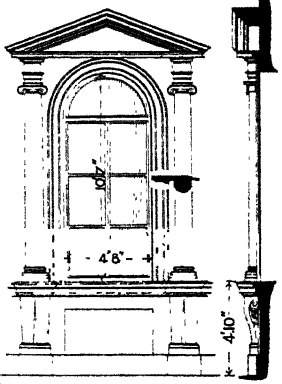
J BALUSTRADE TO PULPIT SIENA CATHEDRAL



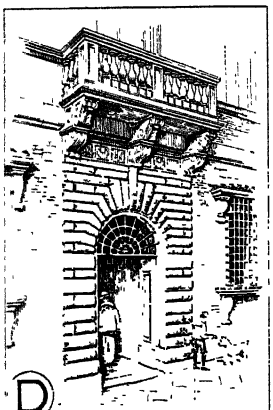
A FIRST FLOOR WINDOW
PAL. FARNESE : ROME



C BALCONY WINDOW : PAL. DELLA CANCELLERIA ROME



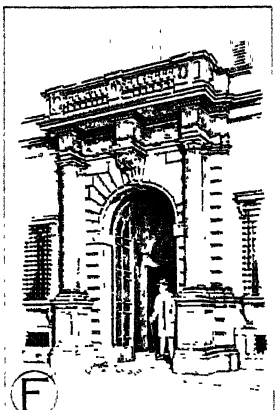
B SECOND FLOOR WINDOW
PAL. FARNESE : ROME



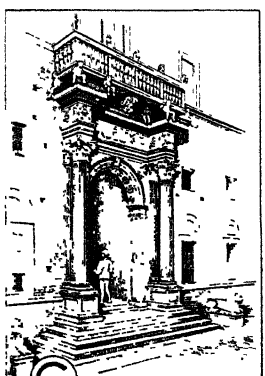
D DOORWAY : PAL. GAGNATI
MONTEPULCIANO



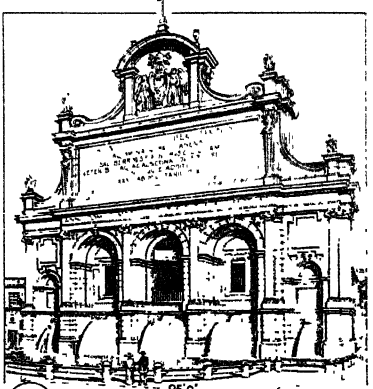
E ARCADE IN CLOISTER
S. MARIA DELLA PACE : ROME



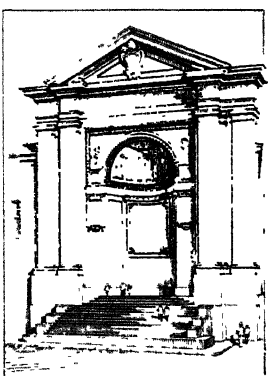
F DOORWAY : PALAZZO
SCIARRA : ROME



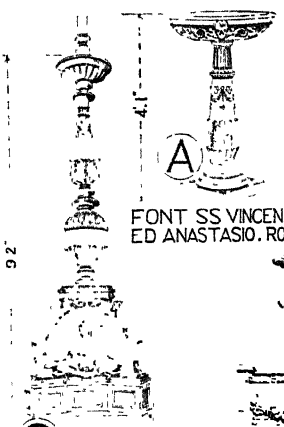
G DOORWAY
PAL. SACRATI : FERRARA



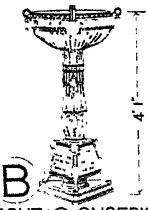
H FONTANA PAOLA : ROME



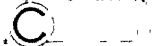
J TRICLINIUM OF
LEO III : ROME



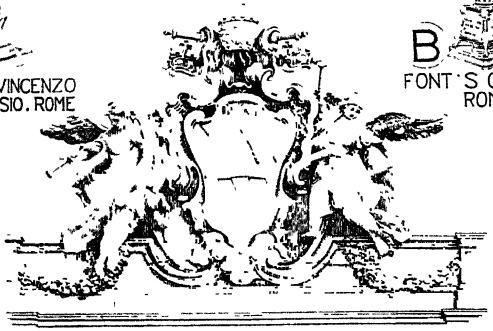
A FONT SS VINCENZO ED ANASTASIO. ROME



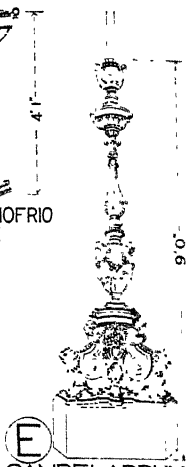
B FONT S ONOFRIO ROME



C CANDELABRUM S.ANDREA DELLA VALLE : ROME



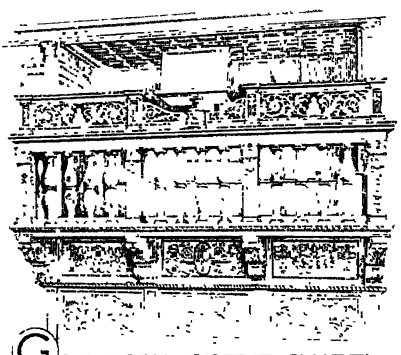
D SCULPTURED GROUP ON PARAPET FONTANA DI TREVI : ROME



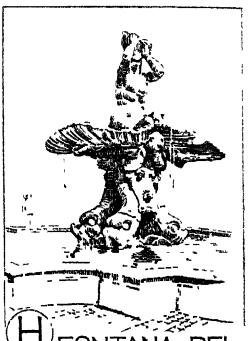
E CANDELABRUM S.ANDREA DELLA VALLE : ROME



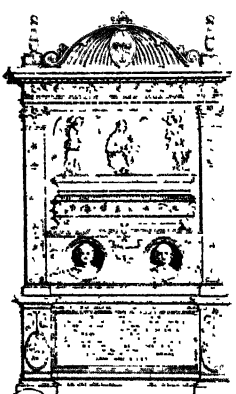
F FONTANA DELLE TARTARUGHE : ROME



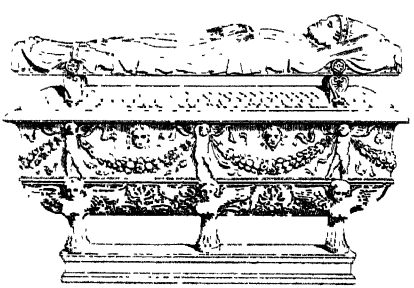
G CANTORIA: SISTINE CHAPEL PALAZZO VATICANO : ROME



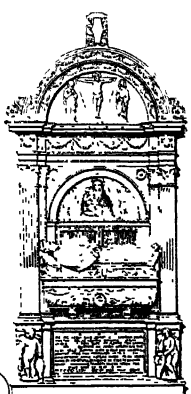
H FONTANA DEL TRITONE : ROME



J THE BONSI MONT S. GREGORIO MAGNO : ROME



K TOMB OF PIETRO RIARIO SS. APOSTOLI : ROME



L MONT TO PIETRO CESI NARNI CATHEDRAL

which contribute much to the effect (p. 604 A). The second dome with its flanking turrets over the wide chancel adds to the picturesqueness of this majestic group, which, throned upon its measured steps above the waters of the canal, is the apotheosis of the Baroque style in Venice.

The **Palazzo Pesaro, Venice** (A.D. 1679) (p. 592 A), a late design by Longhena, evidently owes many of its features to the Palazzo Corner della Ca' Grande (p. 594), but, being nearly 150 years later, shows, in its heavily carved figures, that it ranks among the Baroque productions of the time.

MODERN ARCHITECTURE

Modern architecture, not only in Florence, Rome, and Venice, but also in the whole of Italy, has, with few exceptions, been faithful to the Renaissance style, but it is natural that, with such a heritage of monuments, there should be comparatively few modern buildings of importance.

The **Monument of Vittorio Emanuele II, Rome** (p. 604 C), designed by Sacconi, on the northern slope of the Capitol, has been in course of erection since A.D. 1885. It consists of a vast platform, whereon is an equestrian statue of the king, surrounded by columns 50 ft. high, and has a total height of over 200 ft. This monumental memorial terminates a remarkable vista at the end of the Corso Umberto, and dominates the Imperial city, though it somewhat disturbs the scale and even dwarfs the monuments of the past. However, it fulfils its purpose as an enduring symbol of modern Italian unity effected by the war of A.D. 1870, and also shows in its grand scheme that Italians have not lost their capacity for striking out boldly for effect.

4. COMPARATIVE ANALYSIS

(A comparative table of the essential differences between Gothic and Renaissance architecture is given on p. 547, and between Italian and French Renaissance on p. 645.)

A. Plans.

Florence.—Symmetry and compactness of plan, adapted to town rather than country buildings. Staircases enclosed by walls were roofed by sloping barrel vaults (pp. 557 C, 558 F). Church naves were planned to support coffered vaults (p. 556 H), domes on pendentives (pp. 555 B, H, 556 E), or timber ceilings (pp. 555 G, 556 C, E).

Rome.—More varied planning on a grand scale (pp. 578 G, 579 A, 580 D, 584 E). Staircases circular and elliptical with columnar supports are usual, as in the Barberini, Corsini, and Braschi palaces, the Scala Regia, and at Caprarola (p. 580 C). The old Roman type of dome over a circular space (p. 569 A) and the dome on pendentives over a square space (p. 577 A, D) were both used in churches.

Venice.—Where site permitted, a broken, complex, and picturesque disposition was adopted, as in S. Maria della Salute (p. 604 A, B), but in palaces a straight front to the canals was the rule (p. 603 E). Staircases off a central court surrounded with arcades were characteristic (p. 591 F). Church naves were planned, as in Florence, for vaults, domes, or flat ceilings (pp. 595 B, G, 601 D, H).

B. Walls.

Florence.—Walls recall those of Egypt in severity and are frequently astylar, but varied surface treatment gives character to each storey,

which is also defined by string courses, and the building is crowned by a deep cornice (pp. 557 A, E, F, 558 B, 561 B).

Rome.—Walls are frequently screened with pilasters, both single and coupled, on each storey (pp. 567 A, 568 A, 579 B, F, H, 580 A), or even carried through two storeys to give grandness of scale (pp. 584 A, F, 585 A).

Venice.—Walls are characterised by multiplicity of parts produced by columns to each storey (pp. 592, 596 A, 597 A) and dividing horizontal entablatures, which, to avoid too pronounced a division, are sometimes broken back round the columns (p. 592 A).

C. Openings.

Florence.—Arcades have arches resting directly on columns, with or without a piece of entablature (pp. 555 L, 556 B, 558 C). Doorways are small and severe yet imposing (p. 605 G, J). The doorways at Genoa have triangular and segmental pediments (p. 617 D, E), while another treatment has a subsidiary architrave (p. 617 J). Windows are of three types: (*a*) "Arcade" type with central column and round arches, as in the Palazzi Riccardi (p. 558 G), Strozzi (p. 561 H), and Quaratesi (p. 605 D). (*b*) "Architrave" type with cornice, as in the Palazzo Gondi, or with consoles, as in the Palazzi Pitti (p. 605 F) and Riccardi (p. 558 E). (*c*) "Order" type with columns and entablature, as in the Palazzo Pandolfini (p. 568 B).

Rome.—Arcades have arches supported on piers faced with columns or pilasters, as in S. Maria della Pace (p. 607 E) and the Palazzo Farnese (p. 578 F), based on the Colosseum façade. Doorways are flanked by columns (pp. 567 A, 607 F, G), consoles (pp. 567 A, 568 A, 570 D), or rusticated blocks (pp. 578 C, 607 D). Windows have semicircular arches enclosed in mouldings forming a square frame with spandrels (pp. 567 E, 607 C), or are flanked by columns (p. 607 A, B), or have architraves and side consoles (p. 579 G).

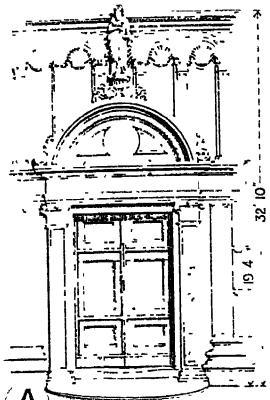
Venice.—Arcades have round arches resting on columns (pp. 591 C, E, 602 H), or on piers faced with columns (pp. 596 A, 597 B, 601 A, 611 H). Doorways are flanked by columns and pilasters supporting cornice and semicircular or triangular pediment (p. 611 A, C) or are enclosed in rusticated blocks (pp. 592 A, 602 B), while sometimes, as at Verona, they have architraves and side consoles (p. 617 L). Windows are large with semi-Gothic tracery (p. 592 B, F) or are flanked by columns (p. 611 D), sometimes supporting round arches with carved spandrels (pp. 592 A, C, 596 D).

D. Roofs.

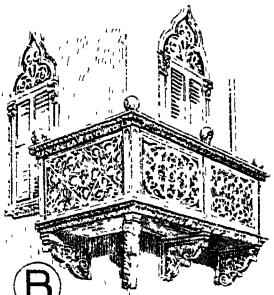
Florence.—Flat tiled roofs are sometimes visible above cornices (pp. 557, 558 B, 561 B). Domes were favourite features in churches (pp. 555, 556). Raking vaults to staircases and waggon or cross-vaults are general, both frescoed and coffered (pp. 555 A, 558 C, 562 D).

Rome.—Roofs are rarely visible (p. 567 A) and often hidden by balustrades (p. 584 A, B, F). Domes on high drums and crowned with lanterns are usual in churches (pp. 569 B, 577 B, H). Vaults were either coffered in stucco or painted, after the style of the newly excavated Baths of Titus (pp. 570 A, J, 578 H, 589 F).

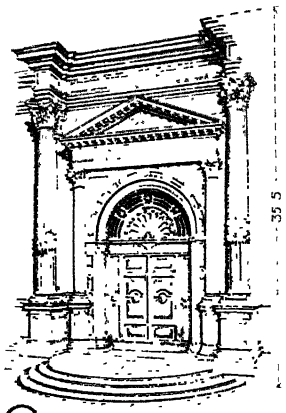
Venice.—Roofs with balustrades are frequent (p. 596 A). Vaulted ceilings of halls, staircases, and churches were elaborately moulded in plaster and frescoed (p. 595 C), while timber ceilings are a feature in palaces. Domes in churches are grouped with towers (pp. 595 F, 601 B, F,



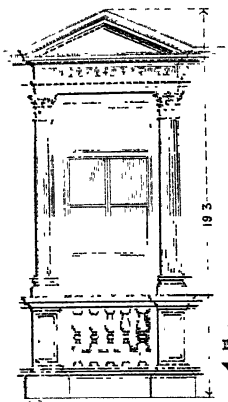
A DOORWAY
S ZACCARIA . VENICE



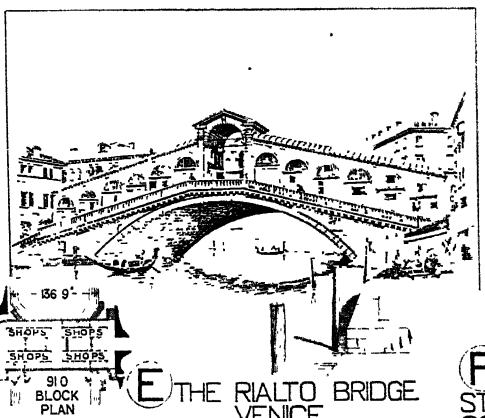
B BALCONY . PALAZZO
FRANCHINI : VERONA



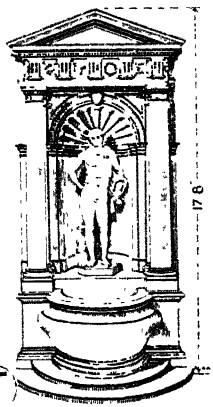
C DOORWAY SCUOLA
DI S ROCCO . VENICE



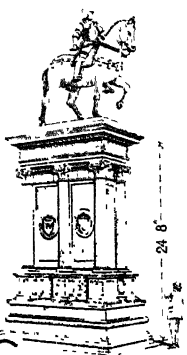
D WINDOW : PAL
REGIO . VENICE



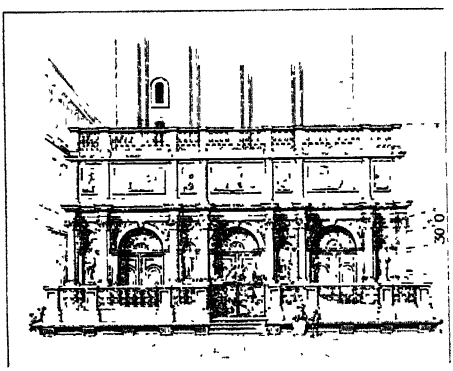
E THE RIALTO BRIDGE
VENICE



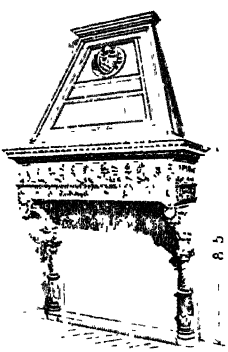
F STATUE-NICHE : PAL
CORNARO : VENICE



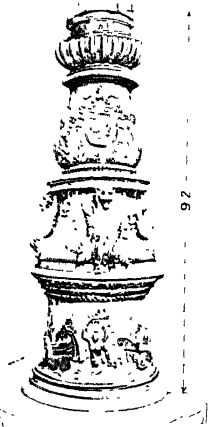
G MONUMENT TO GEN
COLLEONI . VENICE



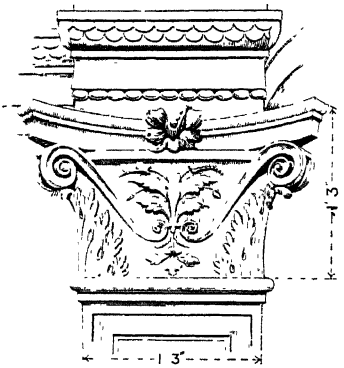
H THE LOGETTA : VENICE



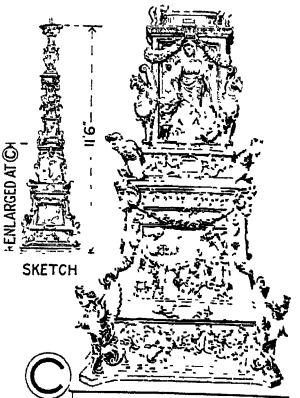
J CHIMNEY-PIECE
DUCAL PALACE
VENICE



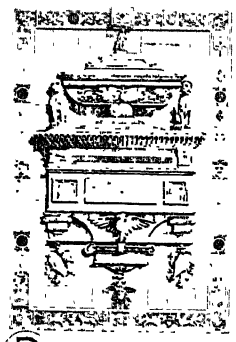
A BRONZE STANDARD
PIAZZA OF S. MARK: VENICE



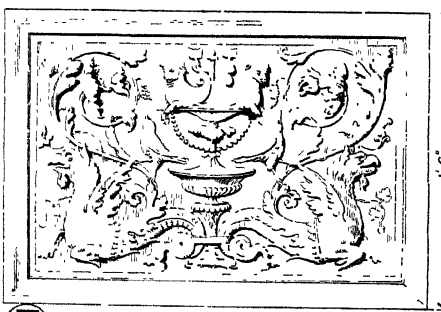
B CAPITAL: S.M DEI
MIRACOLI: VENICE



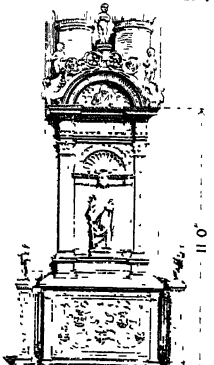
C BRONZE CANDELABRUM
S. ANTONIO: PADUA



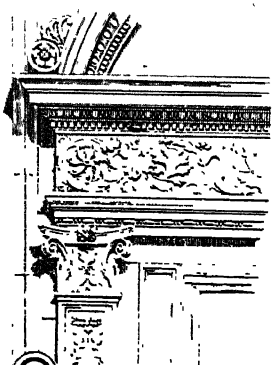
D MONT OF P BERNARDO
THE FRARI CH. VENICE



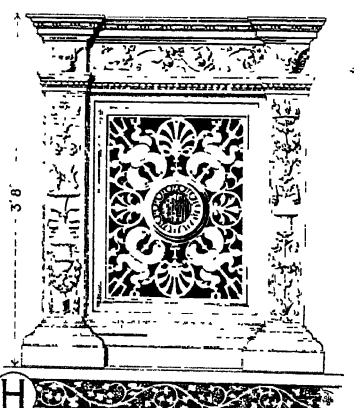
E PANEL: S.M. DEI MIRACOLI: VENICE



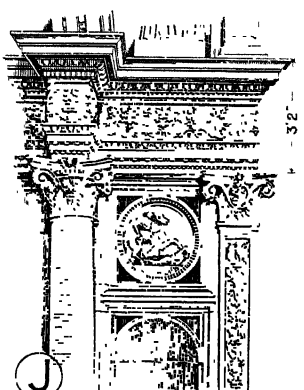
F ALTAR OF S. GIACOMO
S. MARK: VENICE



G PORTION OF DOORWAY
ORFANI AI GESUATI: VENICE



H BALUSTRADE: S.M. DEI MIRACOLI: VENICE



J PORTION OF VENDRAMIN MONT
SS. GIOVANNI E PAOLO: VENICE

604 A). In Milan and other north Italian cities the low internal cupola was often covered by a lofty structure in diminishing stages, as at the Certosa, Pavia (pp. 564 A, 514 F), and S. Maria delle Grazie, Milan (p. 363 A, B).

E. Columns.

Florence.—The Orders, not at first in general use for façades, frequently supported the arches, both in " cortile " (pp. 558 C, 562 D, 563 H) and church arcades (pp. 555 L, 556 B).

Rome.—The Orders, either single or coupled, were at first superimposed (pp. 567 A, 568 A, 579 H), but later one great Order frequently included the whole height of the building (pp. 579 J, 584 B). They regulated not only the height of balustrades, but the spacing and size of windows.

Venice.—Projecting columns in successive tiers with entablatures, often broken back to the wall, were used (p. 592), while buildings by Sansovino and Palladio show a more correct and formal treatment (pp. 596 A, 597, 598).

F. Mouldings.

Florence.—The few and simple mouldings of string courses were slight in projection so as to throw into relief the crowning cornice, designed on Classic models (pp. 558 A, 561 F), as are also the pedimented door-heads at Genoa (p. 617 A, C). Mouldings of ornamental features—consoles, capitals, corbels, niches, and brackets—exhibit refinement of line (pp. 605, 606, 616), while coffered ceilings were of great elaboration as at Genoa (p. 617 G).

Rome.—Classic mouldings from ancient Roman buildings naturally served as models which were closely followed, although new combinations were introduced by Michelangelo and his disciples (pp. 569 J, 578 A). The mouldings of balconies, doorways, and tombs are all Classical in treatment (pp. 607, 608).

Venice.—Mouldings were influenced by local Byzantine and Gothic art, and were extremely refined and original. Mouldings of pedestals, doorways, entablatures, and capitals are frequently carved with intricate ornament (pp. 592 E, G, 596 B, D, 603, 612).

G. Ornament.

The special character of Renaissance ornament has been mentioned (p. 549).

Florence.—Florentine ornament is well illustrated in the sculptured frieze (p. 606 A^1), coffered ceilings (p. 617 G), pilaster (p. 617 K), pilaster capitals (pp. 605 C, 617 H), capitals (p. 605 A, B), chimney-piece (p. 605 H), consoles or corbels (pp. 605 J, 606 G), niche (p. 605 E), tabernacle (p. 606 A), holy-water stoup (p. 606 C), singing-gallery (p. 606 B), lavabos (pp. 606 D, 617 F), altar-piece (p. 606 E), pulpit (p. 606 F), balustrade (p. 606 J), angle lantern and link holder (p. 561 A, C), and reliquary (p. 606 H), many of which were delicately carved with pagan motifs of infant genii, fruit, flowers, and masks, while heraldic shields contrast with plain wall surfaces. The traditional school of fresco painting by Cimabue and Giotto was influenced by the discovery of ancient Roman paintings. The coloured bas-reliefs of Luca della Robbia and his school are specially characteristic of Florentine art at this period.

Rome.—Sculpture was refined in treatment and naturally followed Classical precedent. Roman ornament generally can be studied from the capital (p. 567 C), fountains (pp. 607 H, 608 F, H), the Triclinium

(p. 607 J), singing-gallery (p. 608 G), monuments (p. 608 J, K, L), candelabra (p. 608 C, E), and fonts (p. 608 A, B), and the Baroque treatment is seen in the Fontana di Trevi (pp. 608 D, 593), and the altar in the Gesù Church (p. 577 G). The unearthing of the Baths of Titus, with their frescoes, gave an impetus to the traditional art of painting in tempera on plastic surfaces, which was carried out on a large scale by Raphael, Giulio Romano, and Michelangelo, until it reached its zenith in the Sistine Chapel, Rome.

Venice.—Sculpture is both beautiful and exuberant and even competes with the actual architectural features. The Colleoni Monument, Venice (A.D. 1481) (p. 611 G), is one of the most famous in the world, with a lofty pedestal embellished with columns, surmounted by the bronze equestrian statue by Verrocchio.

The Logetta, Venice (A.D. 1540) (p. 611 H), is obviously founded on the model of the Arch of Titus, Rome, extended to three arches. The niches contain statues of heathen gods, and the high attic has fine sculptured panels and is crowned by a pleasing balustrade. The bronze gates (A.D. 1750) are rich in Renaissance metalwork.

Sculpture was much influenced by the various preceding styles and by a Venetian love of display, as seen in the statue niche (p. 611 F), balcony (p. 611 B), monuments (p. 612 D), chimney-piece (p. 611 J), carved panel (p. 612 E), balustrade (p. 612 H), altar (p. 612 F), candelabrum (p. 612 C), flagstaff standard (p. 612 A), capital (p. 612 B), and carved ornament (p. 612 G, J). The colour-loving Venetians clothed their walls internally with large pictures of subjects both sacred and profane, especially of the triumphs of their city; or else sheathed them in brilliant panels of many-coloured marbles from the shores of the Adriatic.

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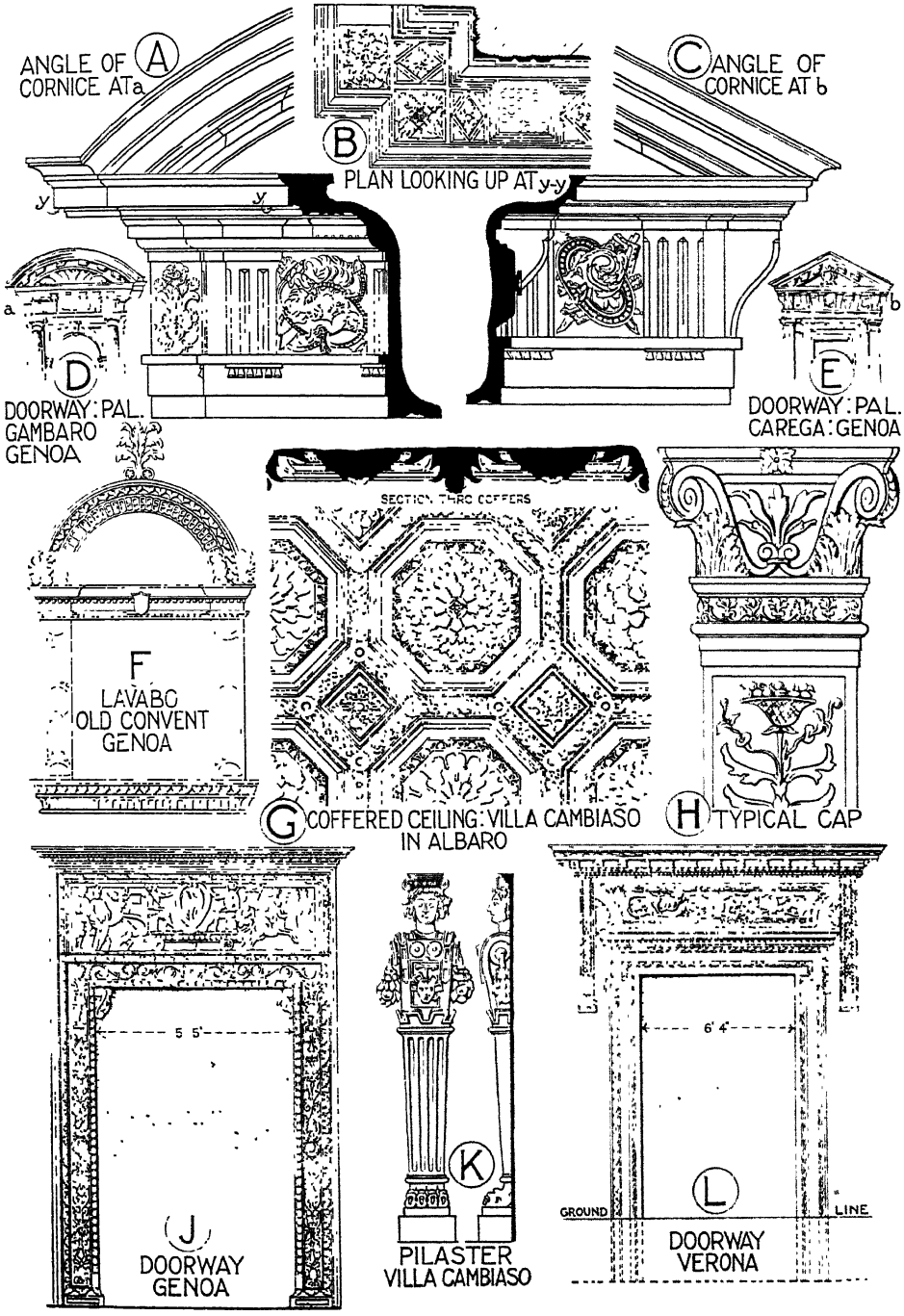
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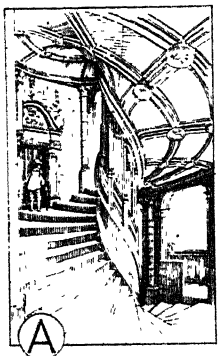
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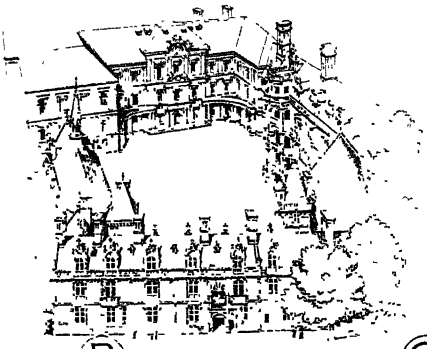
S. Francesco, Rimini


ANGLE OF CORNICE AT a
A
B
PLAN LOOKING UP AT y-y
C
ANGLE OF CORNICE AT b
y
y
a
b
D
DOORWAY: PAL. GAMBARO GENOA
E
DOORWAY: PAL. CAREGA: GENOA
F
LAVABO OLD CONVENT GENOA
SECTION THRO COFFERS
G
COFFERED CEILING: VILLA CAMBIASO IN ALBARO
H
TYPICAL CAP
5' 5"
J
DOORWAY GENOA
K
PILASTER VILLA CAMBIASO
6' 4"
L
GROUND LINE
DOORWAY VERONA

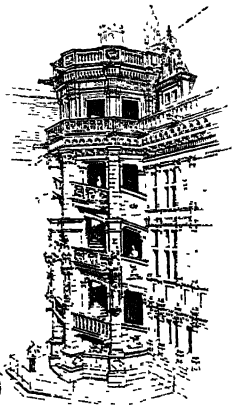
CHATEAU DE BLOIS



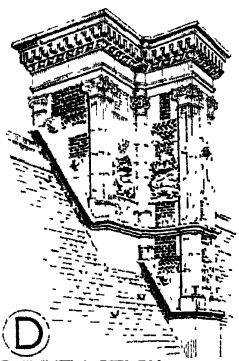
A STAIRCASE TOWER (FRANCIS I)



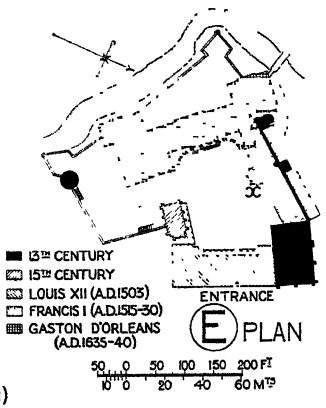
B BIRD'S-EYE VIEW



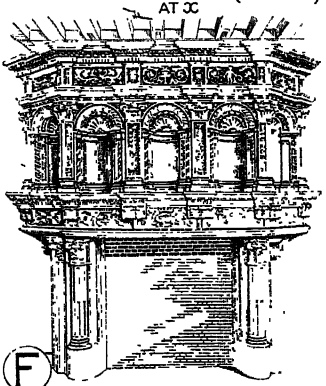
C STAIRCASE TOWER (FRANCIS I) AT CC



D CHIMNEY STACK (FRANCIS I)

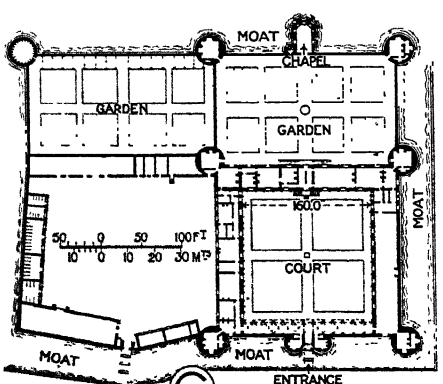


E PLAN

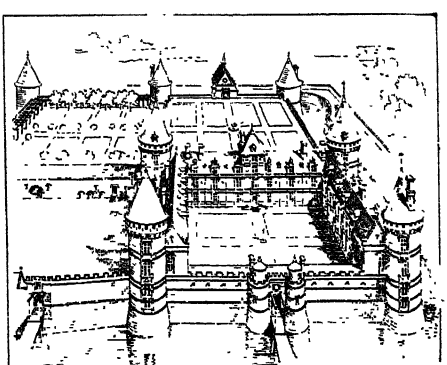


F CHIMNEY PIECE (FRANCIS I)

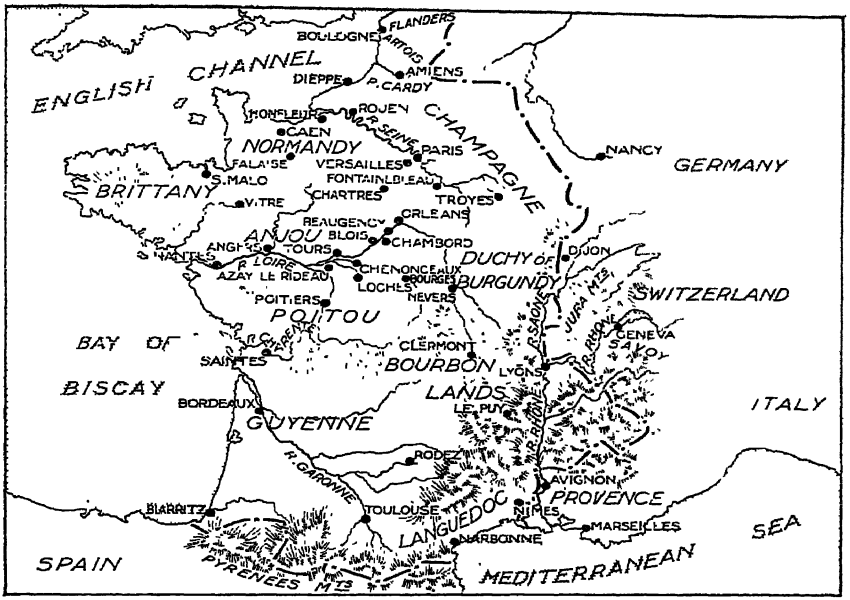
CHATEAU DE BURY



G PLAN



H BIRD'S-EYE VIEW (RESTORED)



FRANCE IN THE 16TH CENTURY

FRENCH RENAISSANCE

(See p. 270 for French Romanesque, and p. 435 for French Gothic. A general introduction to Renaissance architecture in Europe is given (p. 540).)

1. INFLUENCES

i. Geographical.—France had, since the Romanesque and Gothic periods (pp. 270, 435), become one united Kingdom, with Paris as the centre, from which the new Renaissance influence radiated to all parts of the country. This new geographical condition conduced to a homogeneous development within her extended boundaries, in striking contrast to the variety displayed at this period in the independent city-states of Italy. The distance of Paris from the centre of the Renaissance movement in Italy helped to delay its adoption in France for some 50 years.

ii. Geological.—We have already seen in considering the Romanesque and Gothic periods (pp. 270, 435) that throughout France there was good building stone, easily worked; so much so that Paris, in which many of the finest buildings were erected under the influence of the now powerful court, is consequently a city of stone, just as, under different geological conditions, London is a city of brick.

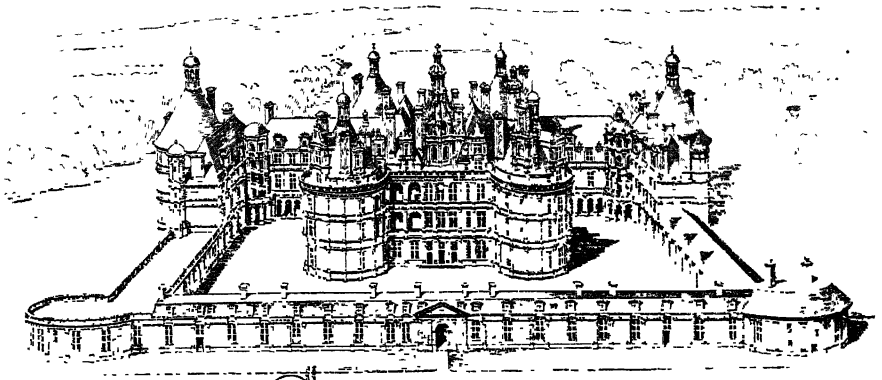
iii. Climatic.—The climate, as in previous periods (pp. 271, 436), asserted its influence on architecture in demanding a continuance of large windows, high-pitched roofs, and lofty chimneys, which differentiated Renaissance architecture in France from that in Italy, the land of its birth.

iv. Religious.—The Reformation obtained little hold in France, and ecclesiastical polity remained much the same until the end of the eighteenth

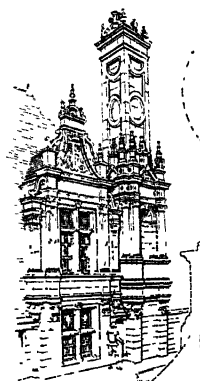
century. The supply of Gothic churches proved adequate for the needs of the population in the early part of the period, and therefore, as in England, few churches were then erected. From A.D. 1558 to the end of the century the country was distracted by religious wars between Huguenots and Catholics, and the Massacre of S. Bartholomew in A.D. 1572 drove many of the best Huguenot craftsmen into England. This emigration was further increased by the revocation of the Edict of Nantes in A.D. 1685. The chief influence on ecclesiastical architecture in France during later Renaissance times came from the powerful order of Jesuits, which, starting in Spain (A.D. 1539), spread over Europe in the wake of the Reformation and built great churches in France designed for preaching to large congregations, with the object of refuting Reformation heresies.

v. Social.—Paris, as the capital of the newly consolidated Kingdom of France and as the centre of the brilliant court of Francis I, attained pre-eminence in art and literature. This resulted in the adoption of one national architectural style which emanated from Paris and the schools in the vicinity; while the valley of the Loire became a highway along which, in response to new social conditions, the famous châteaux of kings and courtiers sprang up and formed models for other parts of the country. This influence was largely augmented by the presence, at the court and in the schools, of such Italian artists as Leonardo da Vinci, Cellini, Serlio, Vignola, Rosso, Primaticcio, and Cortona, and was further spread by Italian craftsmen who, travelling from place to place in the district south of the Loire, there erected many picturesque buildings. The kingly power was gradually becoming absolute, owing largely to the policy of Cardinal Richelieu and his successor, Mazarin, in the reign of Louis XIII (A.D. 1610–43), so that Louis XIV (A.D. 1643–1715) could declare with truth " L'État c'est moi." He was the great patron of the later Renaissance in France, and the palaces of the Louvre and Versailles are monuments of his lavish expenditure on architecture and the decorative arts. Under Louis XV (A.D. 1715–74) the accumulated evils of despotism, bad government, and the selfishness of the aristocracy had already become pronounced, when Voltaire and Rousseau voiced the popular discontent in their writings, which prepared the way for the Revolution of A.D. 1789, when all architectural development was arrested. Both Napoleon I and Napoleon III carried on the work of beautifying Paris, and the latter did much to improve the lay-out of the capital by the formation, from Haussman's designs, of the great boulevards and by the completion of the Louvre and other national buildings. Architecture, however, was to receive a rebuff, owing to the Franco-Prussian War of A.D. 1870–71, when Paris was besieged and capitulated. Then followed the Commune and Civil War, when much wanton damage was done to buildings, as at the Palais des Tuileries (p. 637). The series of five universal Exhibitions held in Paris between A.D. 1855 and 1900 showed the remarkable progress made in the country and its marvellous recovery since the disastrous Franco-Prussian War. Since the establishment of the Republic, the centre of social life has been to a great extent shifted from the old aristocracy of the country châteaux to the new bourgeoisie of the towns. The new many-roomed house is chiefly represented by the private " hôtels " of the successful commercial classes, while the social and commercial life of the ordinary traders places French women on an active equality with men in their businesses, and this naturally results in simplicity and even severity of home life, which is confined to an " apartement " in a large block round the traditional courtyard. New domestic

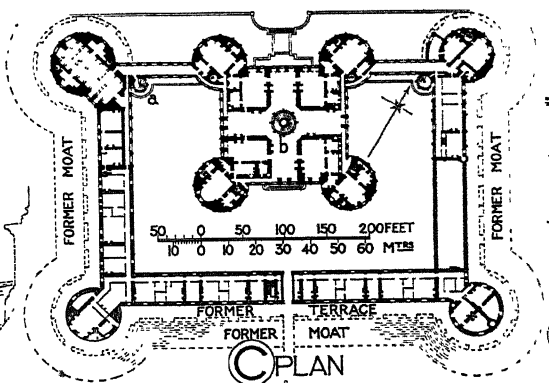
CHATEAU DE CHAMBORD



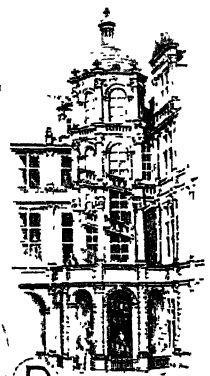
A BIRD'S-EYE VIEW FROM S.



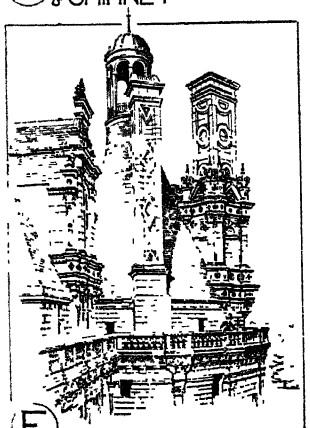
B DORMER & CHIMNEY



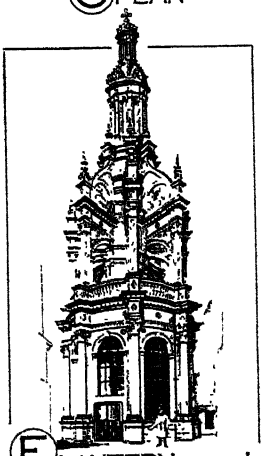
C PLAN



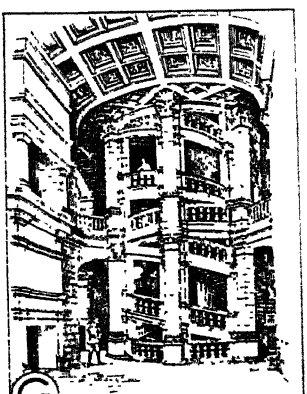
D STAIRCASE AT a



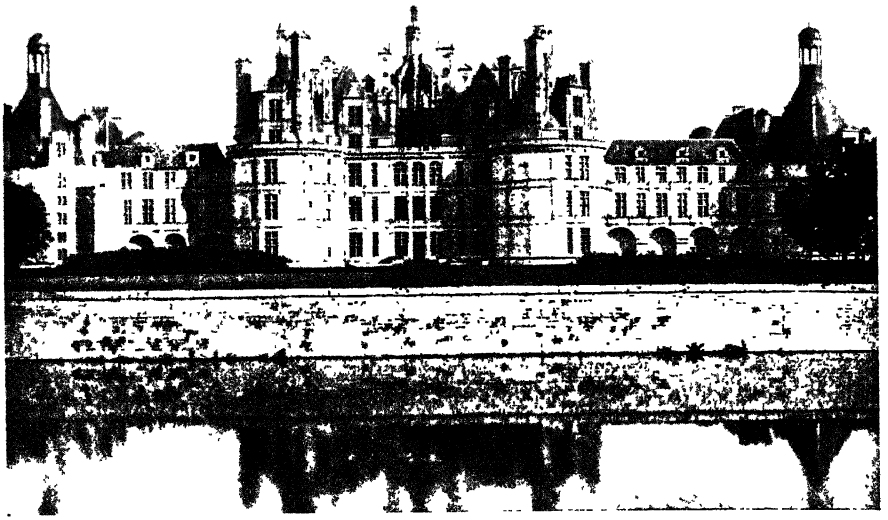
E DORMER & CHIMNEYS



F LANTERN OVER b



G DOUBLE STAIRCASE AT b

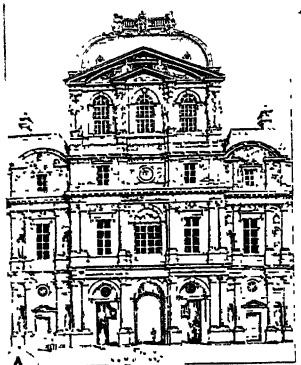


A. Château de Chambord from N.

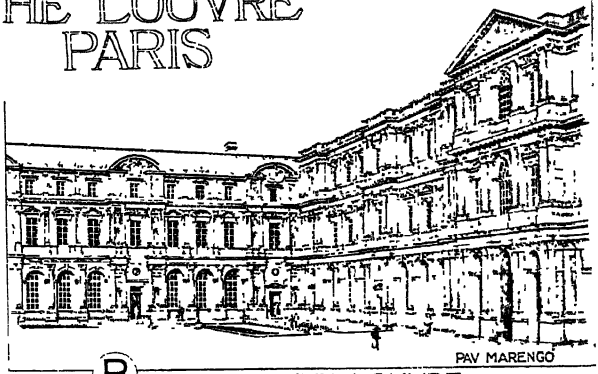


B. Palais de Fontainebleau: Court Façade

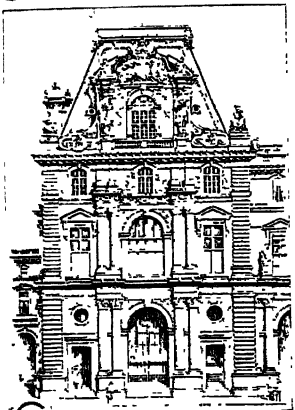
THE LOUVRE PARIS



A PAVILLON DE L'HORLOGE



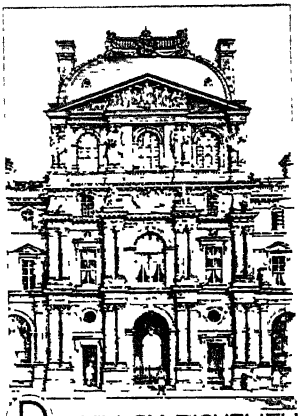
B COUR DU VIEUX LOUVRE



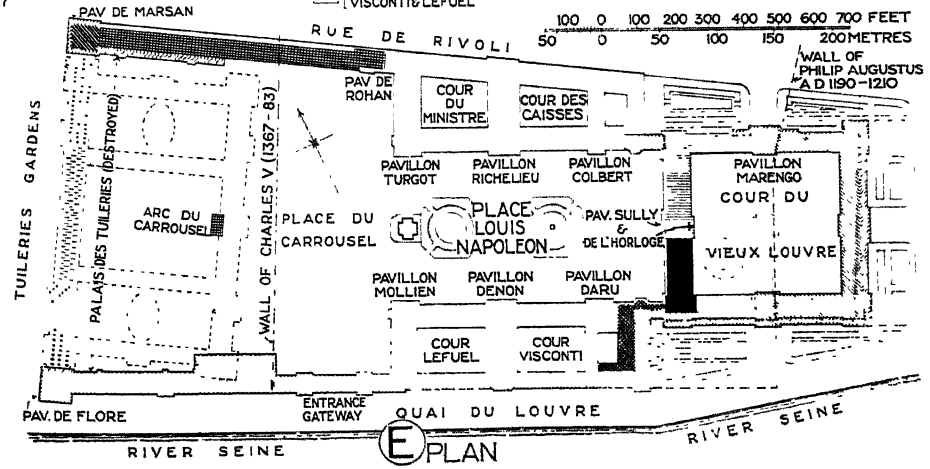
C PAVILLON TURGOT

REFERENCE TABLE

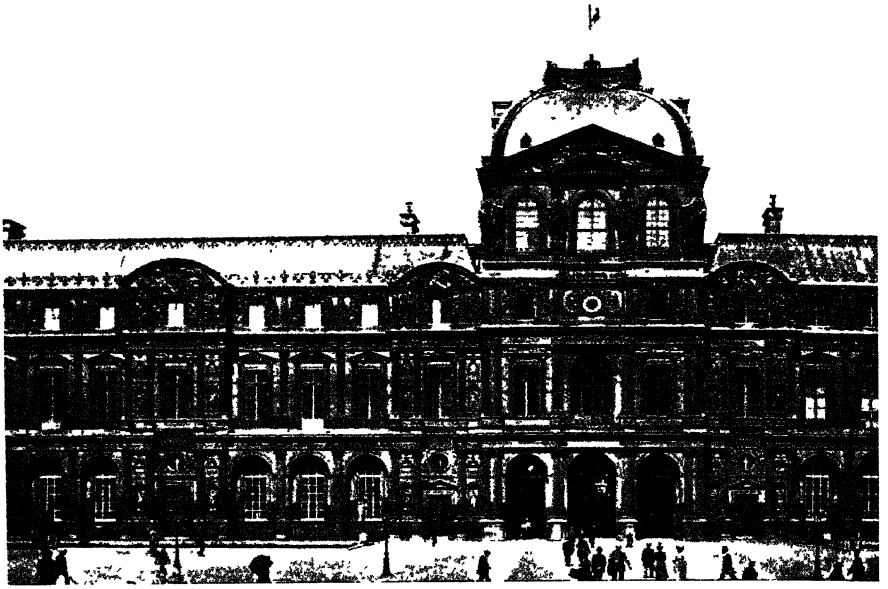
THE LOUVRE	THE TUILERIES
1546 - 59 P LESCOT	THE TUILERIES AS ORIGINALLY DESIGNED
1566 - 1600 P LESCOT	1564 - 70 PH DE L'ORME
C 1566 & C.1570 RCHAMBIGES	1570 - 72 J. BULLANT
1566 - 99 METEZEAU	1600 - 09 DU CERCEAU
C 1605 - 15	1664 - 80 LE VAU & D'ORBAY
1655 - 60	1600 - 09 DU CERCEAU
1624 - 54 JAC. LEMERCIER	1664 - 67 L. LE VAU
1650 - 64 L LE VAU	1806 - 13 PERCIER & FONTAINE
1667 - 74 CL. PERRAULT	1860 - 65 H M LEFUEL
1811 PERCIER & FONTAINE	1873 - 78 H.M LEFUEL
1850 - 57 VISCONTI & LEFUEL	



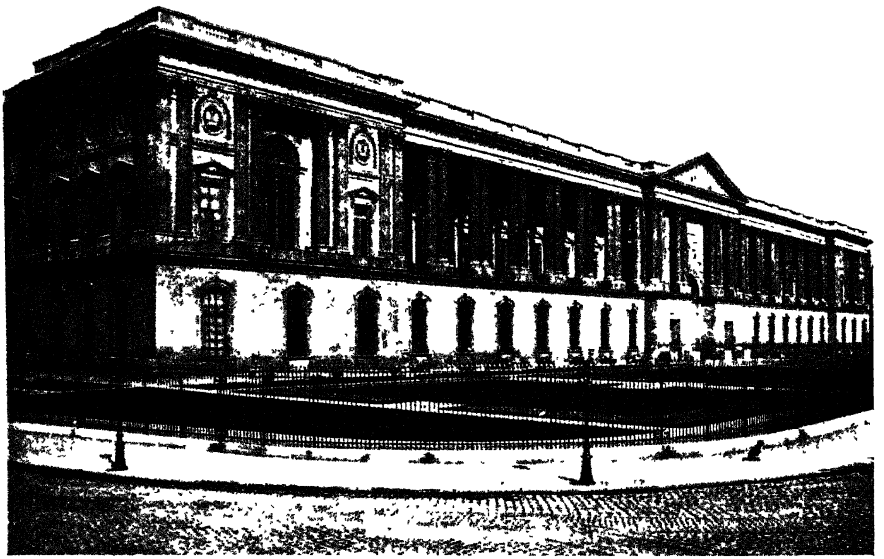
D PAVILLON RICHELIEU



E PLAN

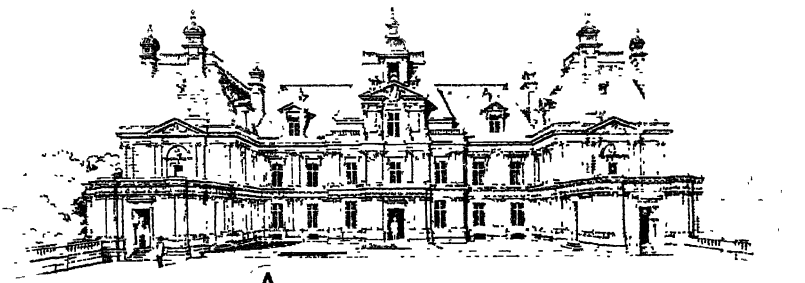


A. The Louvre, Paris. Courtyard Façade, with Pavillon de l'Horloge

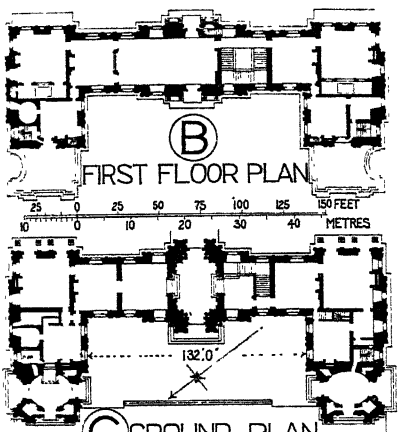


B. The Louvre, Paris: East Façade

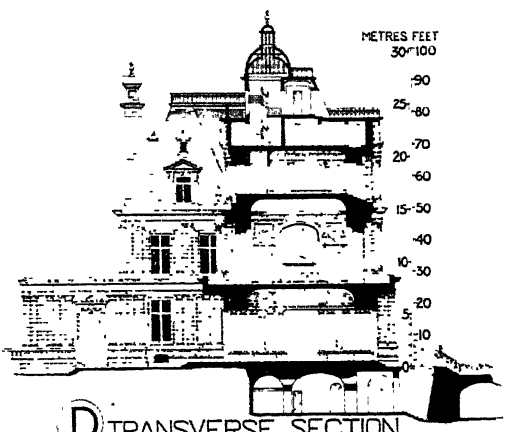
CHATEAU DE MAISONS: NEAR PARIS



A ENTRANCE FACADE

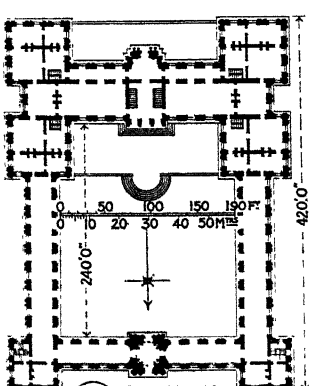


C GROUND PLAN

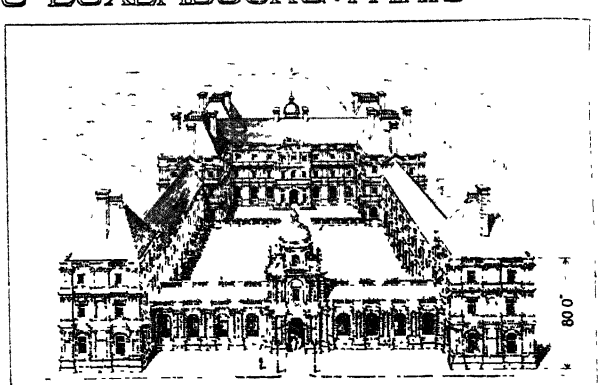


D TRANSVERSE SECTION

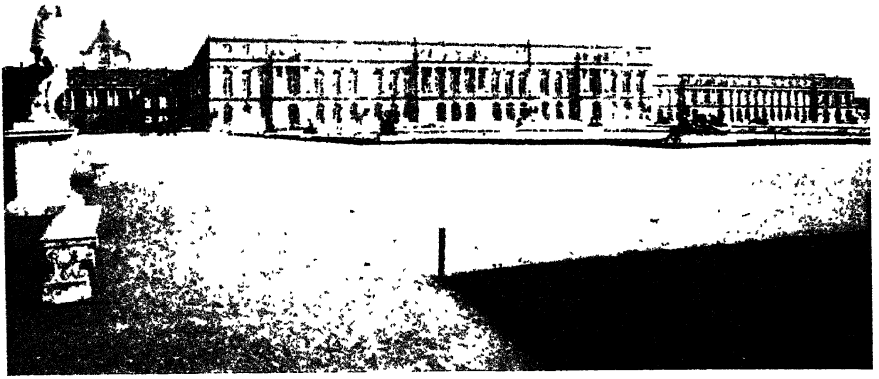
PALAIS DU LUXEMBOURG: PARIS



E ORIGINAL PLAN



F EXTERIOR (ORIGINAL DESIGN) FROM N.



A Palais de Versailles, from Park



B Palais de Versailles: Galerie des Glaces

buildings are, more especially in Paris, still planned with the large central entrance and porter's lodge, to an inner court round which in storeys are the various "apartements" or "flats" opening off the main stairs. The chief development has perhaps been in the building of great shops or universal stores, which of late have been decked out with a certain amount of "l'art nouveau" designed as an advertisement in itself. The main life-blood of France now runs in the enterprising and energetic bourgeoisie, and their home wants are confined to the intensely practical, while pleasure and conviviality are found in open-air restaurants and cafés, from the pavement café to the "Pré Catalan" of the Bois de Boulogne. Of hotels for visitors there has been an increasing supply on the grand scale, both in Paris and in fashionable sea-side resorts. The French have always been dramatic in character and theatre-loving by nature, and the apotheosis of this national trait is to be found in the sumptuous, flamboyant magnificence of the Opera House, Paris (p. 645).

vi. Historical.—The chief factor in the process of building up the Kingdom of France was the final expulsion of the English in A.D. 1453 under the splendid leadership of the inspired Maid, Joan of Arc. A new national feeling was then created, which, as in other countries under similar conditions, gave a great impetus to architecture, and resulted in the erection of many fine buildings, which have since been held worthy to rank as national monuments. During the first half of the sixteenth century Italy became the battlefield of Europe, for in A.D. 1494 Charles VIII of France marched through Italy to claim the Kingdom of Naples, and in A.D. 1508 Louis XII joined the League of Cambrai against Venice, when Florence became the ally of France. Francis I also invaded Italy to substantiate his claim to the throne of Milan, but was defeated and taken prisoner at the Battle of Pavia, A.D. 1525. In these wars the French kings, while failing in their actual object, were brought into contact with the older civilisation of Italy and were thus drawn into the Renaissance movement. Louis XIV, by his conquests in the Netherlands and Germany and his policy of aggression, brought about the formation of a general coalition against himself, ending in his defeat by Marlborough, and this was followed by an era of diminished architectural activity. The war with Prussia (A.D. 1870–71) resulted in the disastrous defeat of France. After the year 1877 colonial expansion brought increased prosperity. . The later Franco-Russian alliance strengthened the position of France and constituted an important factor in the early days of the Great War, and now France, with the aid of the Allies, has once more regained possession of the lost provinces Alsace and Lorraine.

2. ARCHITECTURAL CHARACTER

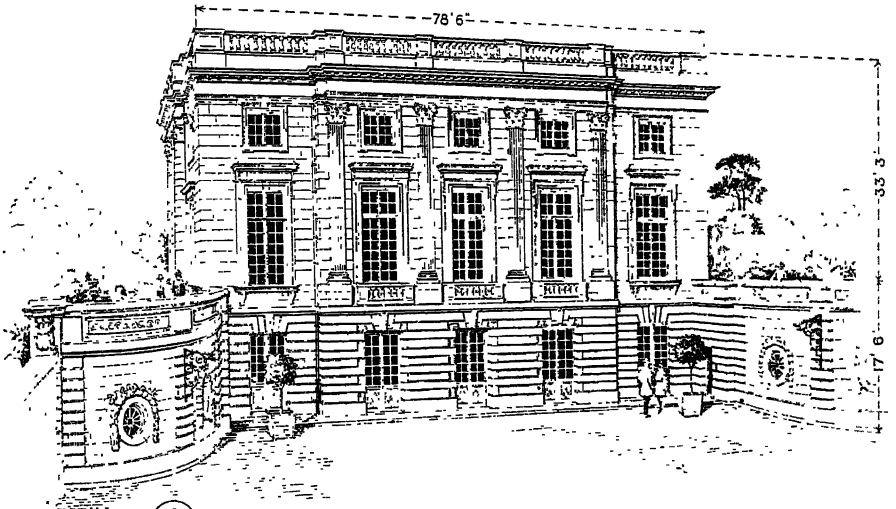
The architectural character of the Renaissance in Europe has already been described as regards features common to it in all countries (p. 542). The style in France may be divided into three periods:

(*a*) *The Early Period* (A.D. 1461–1589 or sixteenth century), comprising the reigns of Louis XI (A.D. 1461–83), Charles VIII (A.D. 1483–98), Louis XII (A.D. 1498–1515), Francis I (A.D. 1515–47), Henry II (A.D. 1547–59), Francis II (A.D. 1559–60), Charles IX (A.D. 1560–74), and Henry III (A.D. 1574–89). The special character of this transitional period lies in the combination of Gothic and Renaissance features to form a picturesque ensemble, and is best understood by noting how it differs from Italian Renaissance. Thus in Italy a return to Classic forms took place, though

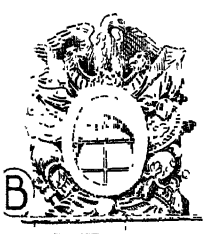
there was variety in the disposition of revived architectural features (p. 542); whereas in France there was a period of transition, during which Renaissance details were grafted on to such Gothic features as flying buttresses and pinnacles (p. 633 A). In Italy the principal buildings were erected in towns, such as Florence, Rome, Venice, and Genoa, as palaces for Popes, prelates, and nobles (pp. 562, 568, 578, 592); while the principal buildings in France were castles in the country round Paris and on the Loire for the king and his courtiers (pp. 618, 621, 622, 625). In Italy, moreover, the influence of ancient Rome is apparent in the Classical treatment of detail and ornament, while the influence of Rome was naturally less manifest in France than in Italy, and the influence of traditional Gothic craftsmanship was pronounced. Then, too, in Italy the predominant characteristics are stateliness and a tendency to Classical horizontality (p. 568 A), but in France the salient features are picturesqueness and a tendency to Gothic verticality (p. 622 A). Early buildings of the period in Italy were principally churches, in consequence of the comparatively small number erected in the Middle Ages, although there are also many Italian palaces of this epoch. Early buildings in France were principally châteaux for the nobility, as sufficient churches of the Middle Ages already existed. French Renaissance architecture approximated more and more, after the early period, to Italian models, although even to the present day there is always displayed that daring originality which is inseparable from all artistic productions of the French people.

(*b*) *The Classical Period* (A.D. 1589–1715 or seventeenth century), comprising the reigns of Henry IV (A.D. 1589–1610), Louis XIII (A.D. 1610–43), and Louis XIV (A.D. 1643–1715). The reign of Louis XIV was a period of remarkable artistic activity which, in external design, developed a correct and dignified style of architecture with a free use of the Orders; while internally it manifested itself in fanciful scrolls, nymphs, wreaths, shells, and cupids, carried out in stucco and papier-mâché, which did not stop at the ornamentation of walls and ceilings, but was consistently applied to furniture and fittings.

(*c*) *The Late Period* (A.D. 1715–93 or eighteenth century), comprising the reigns of Louis XV (A.D. 1715–74) and Louis XVI (A.D. 1774–93). This, as well as the latter part of the previous period, was signalised by sporadic outbreaks of the Baroque style, which began chiefly in the new churches built by the Order of Jesuits, but its spirit was soon seized upon and incorporated in many other buildings. In France the Baroque development was favoured, but in a much less degree, by some of the same factors that contributed to its success in Italy; for in France the Reformation had suffered much the same fate as in Italy. In the seventeenth century the Jesuits swept across the country from Spain and even from Flanders, and built churches in the new style in which to preach against the hated heresy, and thus the churches of Val de Grâce (A.D. 1645) and of the Sorbonne (A.D. 1653) testify to the new movement, both in religion and architecture. The rococo decoration, which so often accompanied the style, was beloved of the artists of Louis XIV and his successors. The Baroque in France is a sumptuous style, boastful in expression and triumphant in scale, and specially remarkable for skilful and original planning. Thus, starting in the reign of Louis XIV, the style, with its freedom of treatment, established itself, especially in internal design, in a country which has always been ready for anything new in artistic expression. The movement is probably best seen in the planning and design of the gardens (executed A.D. 1662–88) at the Palace of Versailles by Le Nôtre



A THE PETIT TRIANON: VERSAILLES FROM S.



B LUCARNE (DORMER WINDOW) HOTEL DES INVALIDES PARIS



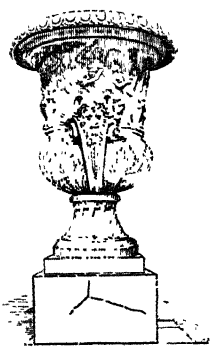
C LUCARNE (DORMER WINDOW) HOTEL DES INVALIDES PARIS



D MARBLE VASE VERSAILLES



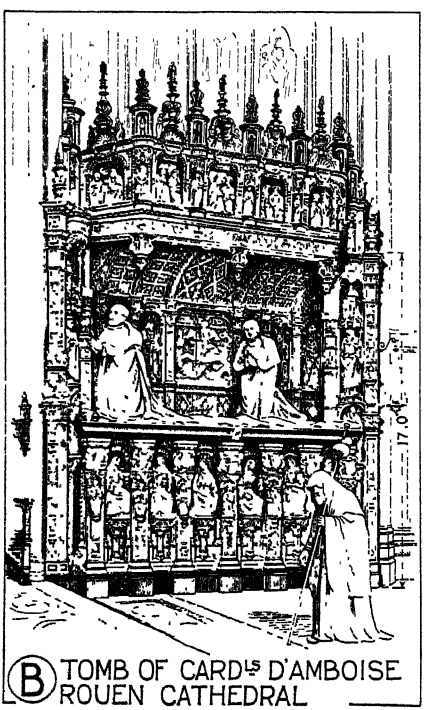
E HOTEL: RUE DU CHERCHE-MIDI: PARIS



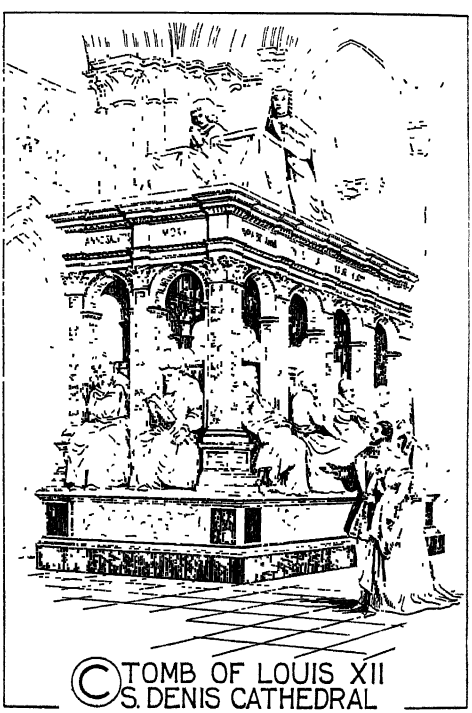
F MARBLE VASE VERSAILLES



A SALON: THE PETIT TRIANON: VERSAILLES



B TOMB OF CARDLS D'AMBOISE
ROUEN CATHEDRAL



C TOMB OF LOUIS XII
S. DENIS CATHEDRAL

(A.D. 1613–1700), and in other well-known gardens in the neighbourhood of Paris. In the provinces, the city of Nancy is an interesting example of town-planning of the period.

A note on Modern French architecture is appended (p. 642).

3. EXAMPLES

SECULAR ARCHITECTURE

The **Château de Blois** (A.D. 1508) (p. 618), begun in the thirteenth century, was continued in the fifteenth and afterwards added to by Louis XII and Francis I, and was finally completed by Gaston d'Orléans in the reign of Louis XIV. All the buildings, belonging to successive periods, were grouped around an irregular quadrangle (p. 618 E), with central entrance enriched with statuary, and its picturesque appearance is shown in the bird's-eye view (p. 618 B). The pilaster treatment of the façade, the windows with panelled instead of moulded mullions (p. 618 C), the ornate crowning cornice and carved roof dormers and chimney-stacks (p. 618 D), make a picturesque and characteristic combination, which is further enhanced by the famous spiral staircase of Francis I in its open tower (p. 618 C), in which the letter F and the Salamander, emblems of Francis I, are introduced as heraldic decoration among carved balusters and vault bosses. The staircase (p. 618 A) has a beautiful architectural treatment, founded on the Mediæval corkscrew stair, similar to a spiral shell, and is said to have been designed by Leonardo da Vinci, who died at Amboise (A.D. 1519). The chimney-pieces (p. 618 F), with columns, entablatures, niches, and carving are ornate, and show that internal fittings were elaborated more than in the Gothic period. The part added by Gaston d'Orléans was designed by Mansard, and its stately formality forms a contrast with the early Renaissance work of the time of Francis I (p. 618 B).

The **Château de Bury** (A.D. 1520) (p. 618), a few miles from Blois, but now in ruins, consisted of a large square court fronted by a screen wall, one storey high, with internal colonnade and terminated by circular towers. The central entrance, also flanked by towers, is provided with a " porte-cochère " for carriages. The courtyard is flanked by two-storeyed wings containing servants' apartments on one side and offices and stabling on the other, connected with the three-storeyed " corps de logis "—the block forming the residence of the family. Beyond this main building was the walled garden with the chapel at the centre of the further side facing the garden entrance of the house. In French country houses of this period, of which the Château de Bury is typical, the internal court, originally designed for security, was retained; whereas in England, after the time of Henry VII, the closed court had become an exception. This description applies also to French town houses even up to the present day, with modifications dependent on site and local conditions.

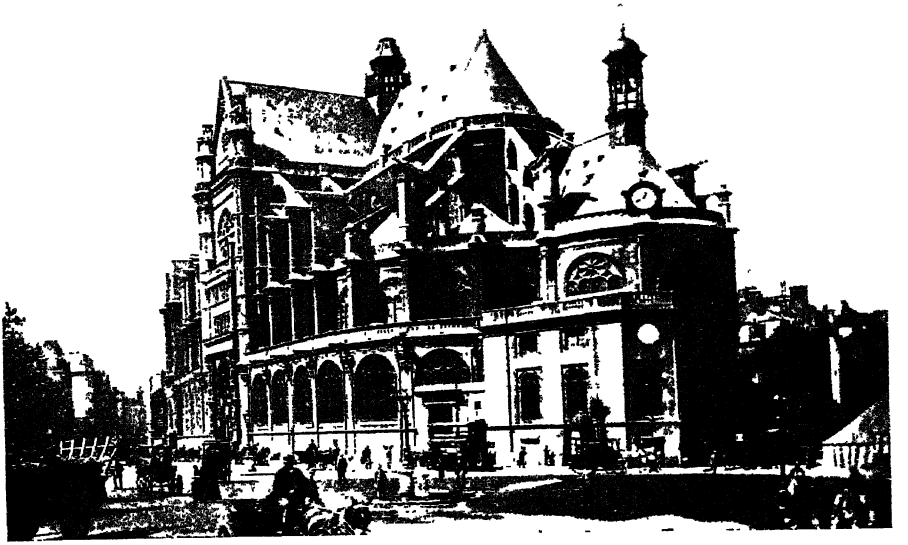
The **Château de Chambord** (A.D. 1526) (pp. 621, 622 A), by Pierre Nepveu, is one of the most famous in the Loire district, and is semi-fortified in character. The plan is unusual and is made up of two rectangles, one within the other, but the façade of the smaller is in the same line with that of the outer court, which thus protects it on three sides, while the fourth is protected by the moat (p. 621 C). This inner block or " donjon," 220 ft. square, corresponds to the keep of an English castle, and has four lofty halls on each floor, finished by elliptical barrel vaulting (p. 621 G); at the junction of

these halls is the world-famous double spira staircase, by which people can ascend and descend simultaneously without being visible to each other. It is built up in a cage of stone (p. 621 G), crowned with a storeyed lantern which forms the central feature of the exterior (pp. 621 A, F, 622 A). There is much waste of space, as rectangular rooms are formed in the circular towers. This remarkable pile has many Gothic features clothed with Renaissance detail, and a vertical Gothic effect is produced by wall pilasters with unique carved capitals (p. 643 C, F), and angle towers with domes or with conical roofs (p. 621 A); while the high-pitched roof with ornate dormers (p. 643 H) and lofty chimneys (p. 621 B, E) combine to make the variegated skyline of one of the most typical of early French Renaissance buildings (p. 622 A). It may be contrasted with the palace at Caprarola by Vignola (p. 576).

The **Palais de Fontainebleau** (A.D. 1528) (p. 622 B), the favourite residence of Francis I, was designed in the first instance by Le Breton on the site of a convent, and has subsequent extensions by Vignola and Serlio, which account for its irregular plan. Unlike the Château de Blois, the exterior is remarkably plain and ineffective in composition, and the palace depends for most of its attraction on the lay-out of its formal gardens, terraces, lakes, and radiating vistas, while the chief interest lies in the architectural features of the interior (p. 643 A, B, D, E) and in the sumptuous saloons decorated by Benvenuto Cellini, Primaticcio, and Serlio (p. 620).

The **Château d'Azay-le-Rideau** (A.D. 1520), the **Château de Chenonceaux** (A.D. 1515–23), picturesquely situated on a bridge over the lake, with a characteristic doorway (p. 643 G), and the **Château de S. Germain-en-Laye** (A.D. 1539) are all in the transitional style.

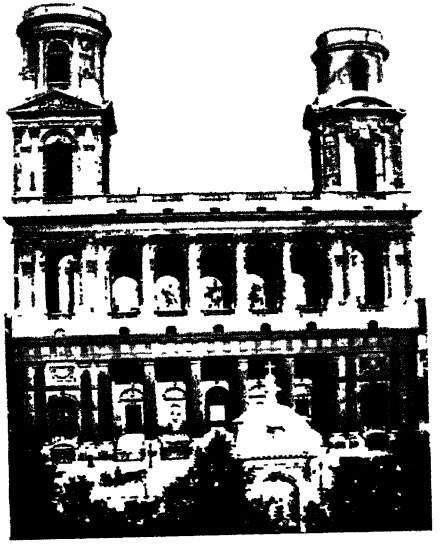
The **Palais du Louvre, Paris** (A.D. 1546–1878) (pp. 623, 624), continued in course of construction from the time of Francis I to Napoleon III in the nineteenth century, and thus exhibits a complete history of the progressive stages of French Renaissance art carried out in successive periods (p. 623 E). The Louvre, together with the Tuileries, constituted one of the most imposing palaces in Europe, and enclosed an area of over 45 acres. Pierre Lescot (A.D. 1515–78) was employed by Francis I to design a palace in the new style on the site of the old Gothic château which occupied the south-west quarter of the present court, and he commenced the west side of the Renaissance palace (A.D. 1546) (p. 623 E). The façade of this early design consists of two storeys with Corinthian and Composite pilasters surmounted by an attic storey, and is enriched with beautiful sculptured detail by Jean Goujon (A.D. 1510–72) (pp. 623 A, B, 624 A). Catherine de' Medici continued Lescot's design round the south of the court, and conceived the idea of connecting the Louvre and the Palais des Tuileries by a gallery along the Seine, a scheme which was not completed till some 300 years later. Henry IV, who was the last monarch to live in the Louvre, instructed Du Cerceau to erect (A.D. 1600–9) the gallery facing the Seine, in which pilasters including two storeys were surmounted by alternately triangular and segmental pediments, but this was remodelled under Napoleon III (A.D. 1860–65). Louis XIII, with Cardinal Richelieu, enlarged the original scheme, and in A.D. 1624 the north and east sides of the old château were pulled down. Lemercier then commenced the present court, which, measuring 400 ft. square, is four times the area of the Mediæval court, but he only completed (A.D. 1624–54) the north-west part, including the Pavillon de l'Horloge, which became the centre of the enlarged façade on the west. Louis XIV, with Cardinal Mazarin,



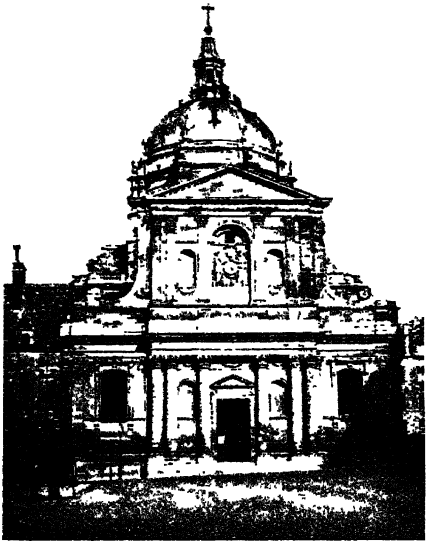
A. S. Eustache, Paris



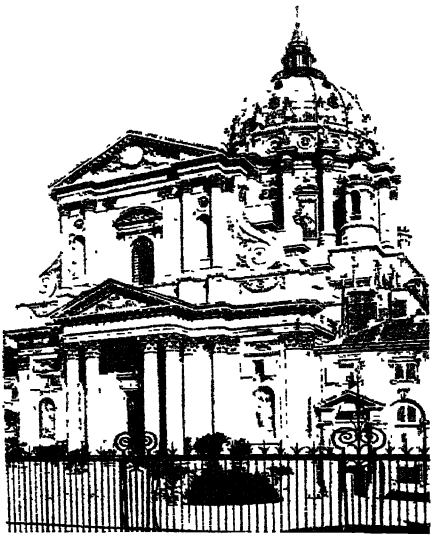
B. S. Etienne du Mont, Paris



C. S. Sulpice, Paris



A. Church of the Sorbonne, Paris

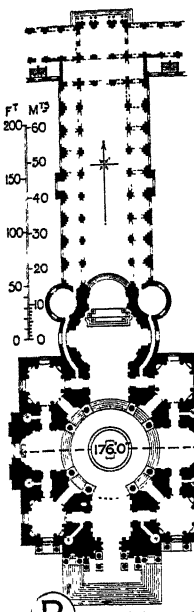


B. Church of the Val de Grâce, Paris

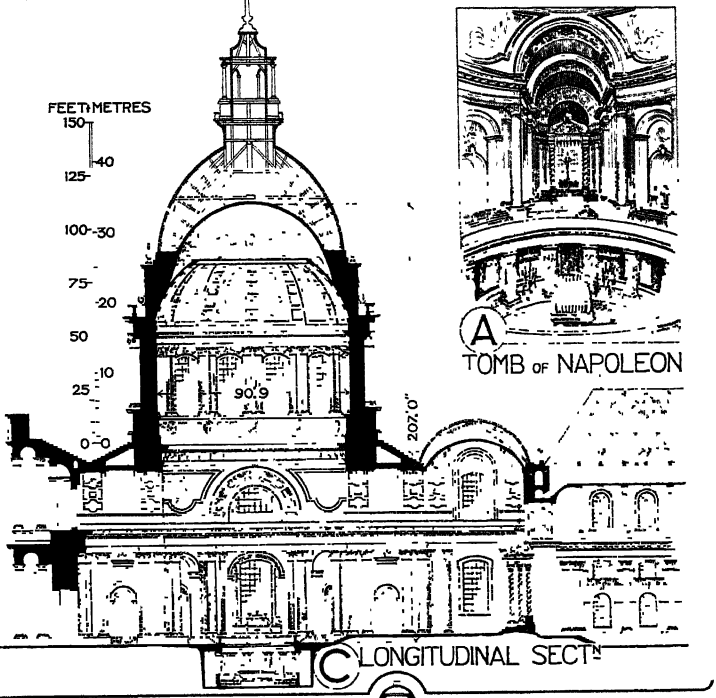


C. The Panthéon, Paris

DOME OF THE INVALIDES: PARIS



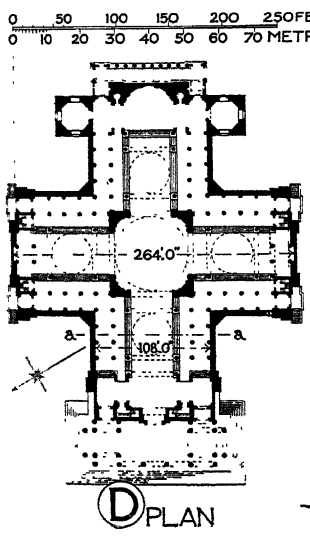
B PLAN



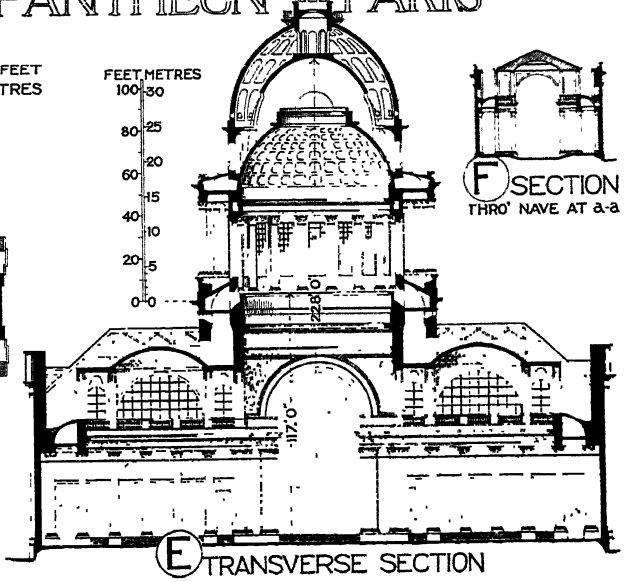
C LONGITUDINAL SECTN

A TOMB OF NAPOLEON

THE PANTHEON PARIS



D PLAN

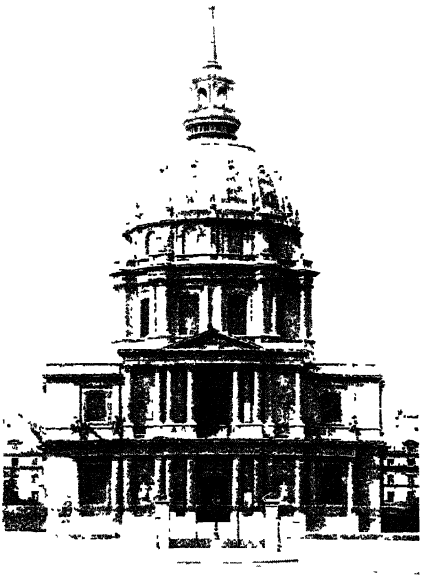


E TRANSVERSE SECTION

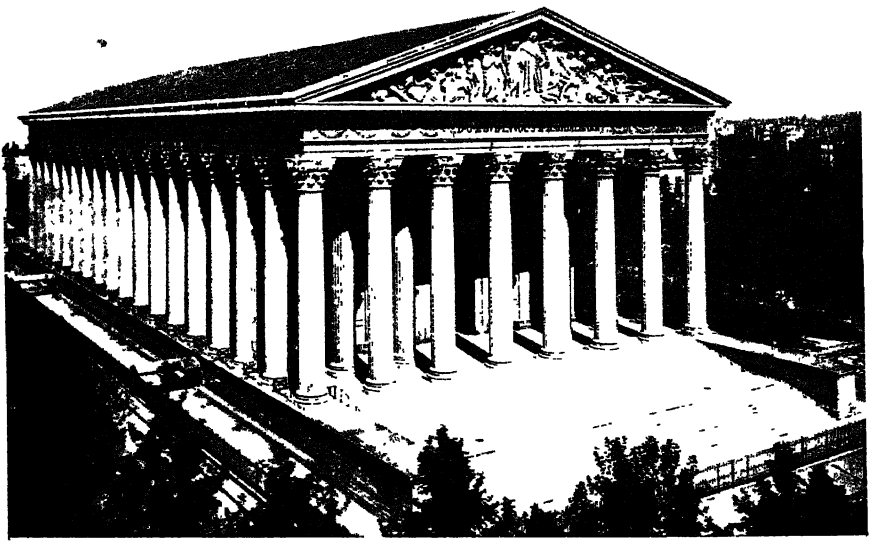
F SECTION THRO' NAVE AT a-a



A. The Panthéon, Paris



B. The Dome of the Invalides, Paris



C. The Madeleine, Paris

commissioned Le Vau to complete the north, east, and south sides of the enlarged court (A.D. 1650–64), and with his minister, Colbert, employed Claude Perrault to erect (A.D. 1667–74) the eastern external colonnade, and a pilaster treatment was then carried round part of the north and south external façades. This eastern façade (p. 624 B), probably suggested to Perrault by Bernini, is of a much more monumental character than the court façades. It is 600 ft. in length, and consists of a solid-looking basement which supports a colonnade of coupled Corinthian columns, stretching between the pedimented centre-piece and the side wings, instead of the usual and more effective pavilion blocks. As Perrault's design was higher than the portions already erected, a third Order was now substituted for the attic storey on the east side and on the eastern half of north and south sides of the court, which, as completed with the three storeys of Orders (p. 623 B), contrasts with the portion with two storeys and an attic as designed by Lescot. The courtyard of the Ospedale Maggiore, Milan (p. 572), is the only one in Italy that is comparable to the completed court of the Louvre. There is, however, this striking national difference, that, whereas the Italian cortile has open colonnades in two storeys, the arcading in the French version is only on the surface of the walls.

In A.D. 1675 the work was suspended, as Louis XIV was directing his energies to his palace at Versailles, and very little appears to have been done to the building until Napoleon I employed Percier and Fontaine to continue the Order to the third storey on the western half of the north and south sides of the court, and a small portion at the north-east angle of the Place Louis Napoléon. Between A.D. 1806 and 1813 the same architects commenced the north wing from the Pavillon de Marsan to the Pavillon de Rohan, to connect the Louvre to the Palais des Tuileries, but this wing lost its significance when the latter was destroyed. Napoleon III conceived the idea of effecting a satisfactory junction between the Louvre and the Tuileries, and in order to mask the converging sides of the connecting wings he employed (A.D. 1850–57) Visconti and Lefuel to erect the building known as the "Nouveau Louvre" on the north and south of the Place Louis Napoléon. Lefuel refaced (A.D. 1860–78) the Pavillon de Flore and the adjacent wing towards the Seine, and also the Pavillon de Marsan and a small portion adjacent, and at the same time the facing of the north wing fronting the Rue de Rivoli was taken in hand. The Pavillon de l'Horloge (pp. 623 A, 624 A), designed by Lemercier, is a fine composition, obviously derived from the high towers of the Mediæval period, and gave the keynote for the subsequent Pavillon Turgot (p. 623 C) and the Pavillon Richelieu (p. 623 D), which form most pleasing specimens of modern French architecture in which dignity is combined with picturesqueness.

The **Palais des Tuileries, Paris** (A.D. 1564–1680) (p. 623 E), was commenced for Catherine de' Medici by Philibert de l'Orme, who, however, only erected a domical central pavilion, flanked by low wings (A.D. 1564–70). A wing was added (A.D. 1570–92) by Jean Bullant, and further extensions were begun by Du Cerceau (A.D. 1600–9), but not completed till A.D. 1680 by Le Vau and D'Orbay. The Palace was rich in historical associations, especially in connection with the overthrow of the French monarchy in A.D. 1792, and from the time of Napoleon I, who erected the Arc du Carrousel to serve as a monumental entrance, it was the constant residence of the French rulers, till its destruction by the Communists in A.D. 1871. There is a small portion of the façade in the Tuileries gardens.

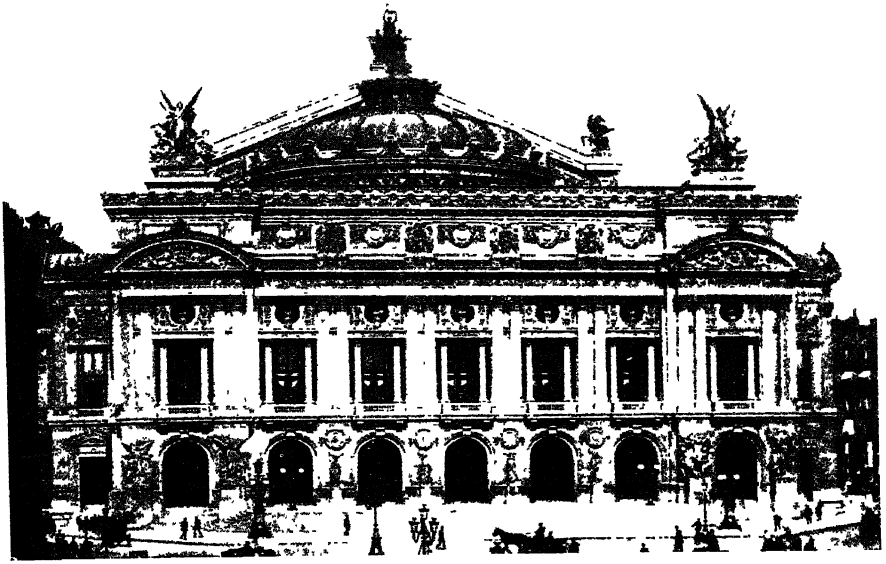
The **Palais du Luxembourg, Paris** (A.D. 1615–24) (p. 625), was erected by de Brosse for Marie de' Medici in the bold and simple style of her native city of Florence. The plan (p. 625 E) is of the recognised French type, and consists of a one-storeyed building with " porte-cochère," two-storeyed side wings for service and stabling, and the three-storeyed " corps de logis " forming a court, 240 ft. by 190 ft. The Palace is now used as the Senate House.

The **Château de Maisons, near Paris** (A.D. 1642–50) (p. 625), was designed by François Mansard on a symmetrical E-plan with central entrance and twin oval-shaped side vestibules. It is notable externally for the effective use of the Classic Orders and the high roofs, with prominent chimney-stacks, of the three pavilions, and internally for the refinement of detail of the balustraded stairs, carved chimney-pieces, and ornamented ceilings.

The **Palais de Versailles** (A.D. 1661–1756) was erected for Louis XIV by Le Vau, who designed a palace round the old hunting château (A.D. 1624–26) erected by de Brosse for Louis XIII. Louis XIV later employed Jules Hardouin Mansard to extend the palace north and south, so as to form a building of over a quarter of a mile long. Other portions were added (A.D. 1756) by Gabriel for Louis XV. The park façade (p. 626 A), three storeys in height, is remarkable for its uniformity and tameness, with a rusticated ground storey supporting an Order of pilasters crowned by a high attic and a balustrade concealing the roof, producing a monotonous effect, devoid of interest and without any attempt to break the skyline. The sumptuous apartments form in themselves a veritable museum of the decorative art of the period. The magnificent " Galerie des Glaces " (p. 626 B), by Mansard, is 240 ft. long by 34 ft. wide and 43 ft. high, and may be compared with the Galerie d'Apollon at the Louvre. Decorated by Le Brun in A.D. 1680, its walls are ornamented with Corinthian pilasters of green marble, supporting an entablature surmounted by trophies, and a fine ornamental vault with painted panels representing the apotheosis of " Le Roi Soleil." This royal residence is typical of the period to which it belongs, both in the magnitude of its lay-out and in the enormous expenditure in money and labour which it involved. The magnificent formal gardens laid out by Le Nôtre, on axial lines cleverly manipulated to give vistas of avenues and water canals, are liberally adorned with fountains, terraces, and arbours, set off with statues and vases in the antique style (p. 629 D, F). This ostentatious palace and pleasure garden was at once the expression of the irresponsible extravagance of " Le Grand Monarque " and the aggravation of popular discontent. Its later historical significance lies in the fact that here (A.D. 1871) King William of Prussia was proclaimed German Emperor, and in 1919 the Germans were forced to sign the peace terms required by the Allied Nations.

The **Petit Trianon, Versailles** (A.D. 1762–68) (pp. 629, 630), erected by Louis XV for Madame Dubarry, was a favourite residence in later years of Marie Antoinette. The entrance façade (p. 629 A) is a typical example of late French Renaissance, with its rusticated basement and its upper storeys included in one Order of Corinthian pilasters. The salon (p. 630 A) is also a typical example of the Louis XV period, with its panelled walls, large mirrors, double doors, consoled chimney-piece, coved ceiling, and elaborate chandelier, while the chairs and the table with its Hermes legs complete this interesting interior.

There are also throughout France, both in town and country, numerous Renaissance buildings of varying degrees of importance, such as the House of Agnes Sorel, Orleans, the Hôtel de Bourgthéroulde, Rouen, and the Hôtel de Ville, Beaugency, a beautiful instance of municipal architecture.



A. The Opera House, Paris

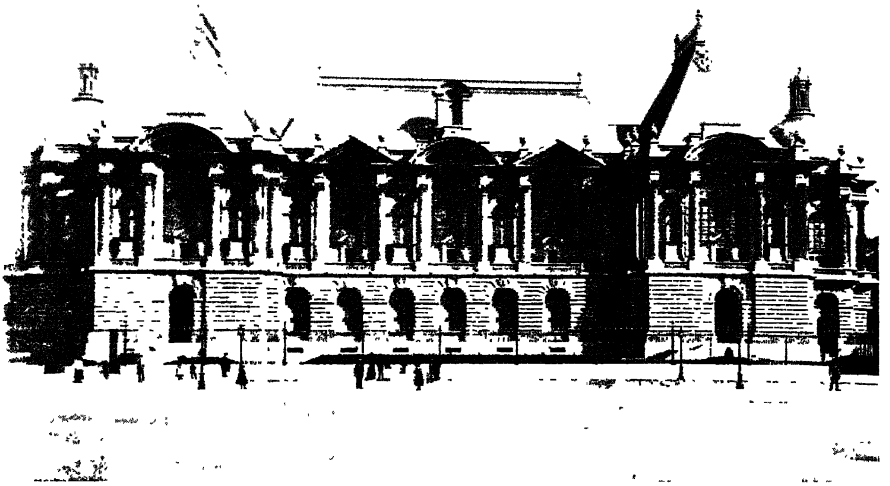


B. Grand Staircase

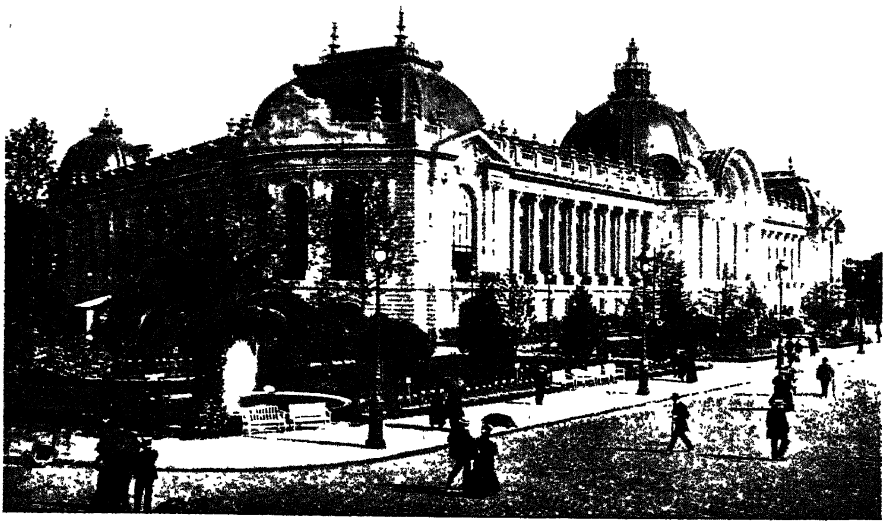


C Grand Staircase : Upper Flight

The Opera House, Paris



A. Palais des Beaux-Arts, Lille



B. Le Petit Palais, Paris

ECCLESIASTICAL ARCHITECTURE

The earliest indications of Renaissance in France, as in England, occur in sepulchral monuments, pulpits, portals, and fittings of existing Gothic churches, such as the **Tomb of Louis XII** (A.D. 1515) in S. Denis Cathedral (p. 630 C), the **Tomb of the Cardinals d'Amboise, Rouen** (p. 630 B), the **portals of La Trinité, Falaise**, the **external pulpit at the Château de Vitré** and the **apses of S. Pierre, Caen.**

S. Eustache, Paris (A.D. 1532–89) (p. 633 A), by Dominic of Cortona, but not completed till A.D. 1654, is planned like a five-aisled Mediæval church with apsidal end, high roofs, window tracery, flying buttresses, pinnacles, and deeply recessed portals, all clothed with Renaissance detail, and is a remarkable evidence of how the Mediæval plan lingered on into the Renaissance period.

S. Etienne du Mont, Paris (A.D. 1517–38) (p. 633 B), is on similar lines, with nave piers crowned with Doric-like capitals supporting ribbed vaulting, and there is an unusual ambulatory above the nave arcade. The famous Jubé or rood screen has double staircases with ornate balustrades carved with Renaissance detail by the highly skilled masons of the period. The centre of the façade, added in A.D. 1620, has an entrance doorway framed with Composite columns, supporting an entablature and sculptured pediment. Above is a circular window with quasi-Gothic tracery, crowned with a steep-pitched gable to the nave, while beyond is a lofty tower.

The **Church of the Sorbonne, Paris** (A.D. 1635–59) (p. 634 A), designed for Cardinal Richelieu by Lemercier, has a façade of superimposed Orders, crowned by a pediment and connected to the aisles by deep consoles, while over the centre rises a fine dome, 40 ft. internal diameter.

The **Church of the Val de Grâce, Paris** (A.D. 1645–50), by François Mansard, formerly attached to a monastery, now forms part of the Military Hospital. The exterior (p. 634 B), which has some resemblance to the Church of the Sorbonne, has a fine projecting portal, and the aisles are connected to the nave by consoles, while in the distance rises the massive dome, which forms the central feature of the group. The interior, with wide nave flanked by piers faced with Corinthian pilasters, vaulted roof and dome (56 ft. diameter), and saucer domes, undoubtedly influenced Sir Christopher Wren in his design for S. Paul's, London.

SS. Paul and Louis, Paris (A.D. 1627–41), a typical Baroque Jesuit church, florid in character, has a lofty nave and galleried aisles. The dome is one of the earliest in Paris, and the three-storeyed façade is characteristically overloaded with decoration.

S. Sulpice, Paris (A.D. 1655) (p. 633 C), designed by Le Vau, is a church of vast size, with no less than eighteen chapels, and with domical vaulting borne by Corinthian columns. The famous façade (A.D. 1733–45) (p. 633 C), designed by Servandoni, is 205 ft. wide and forms a great two-storeyed narthex screen with superimposed Doric and Ionic Orders flanked by towers erected in A.D. 1749 and A.D. 1777.

The **Dome of the Invalides, Paris** (A.D. 1706) (pp. 635, 636 B), by Jules Hardouin Mansard, completed the scheme of the Hôtel des Invalides, commenced by Bruant in A.D. 1670, and is one of the most impressive Renaissance domes in France (p. 636 B). It has an internal diameter of 90 ft. 9 ins., and is placed over the centre of a Greek cross plan, resting on four piers in which openings lead by steps to four angle chapels (p. 635 B) which fill in the angles of the cross, making a square of 198 ft. externally. It has a high drum with

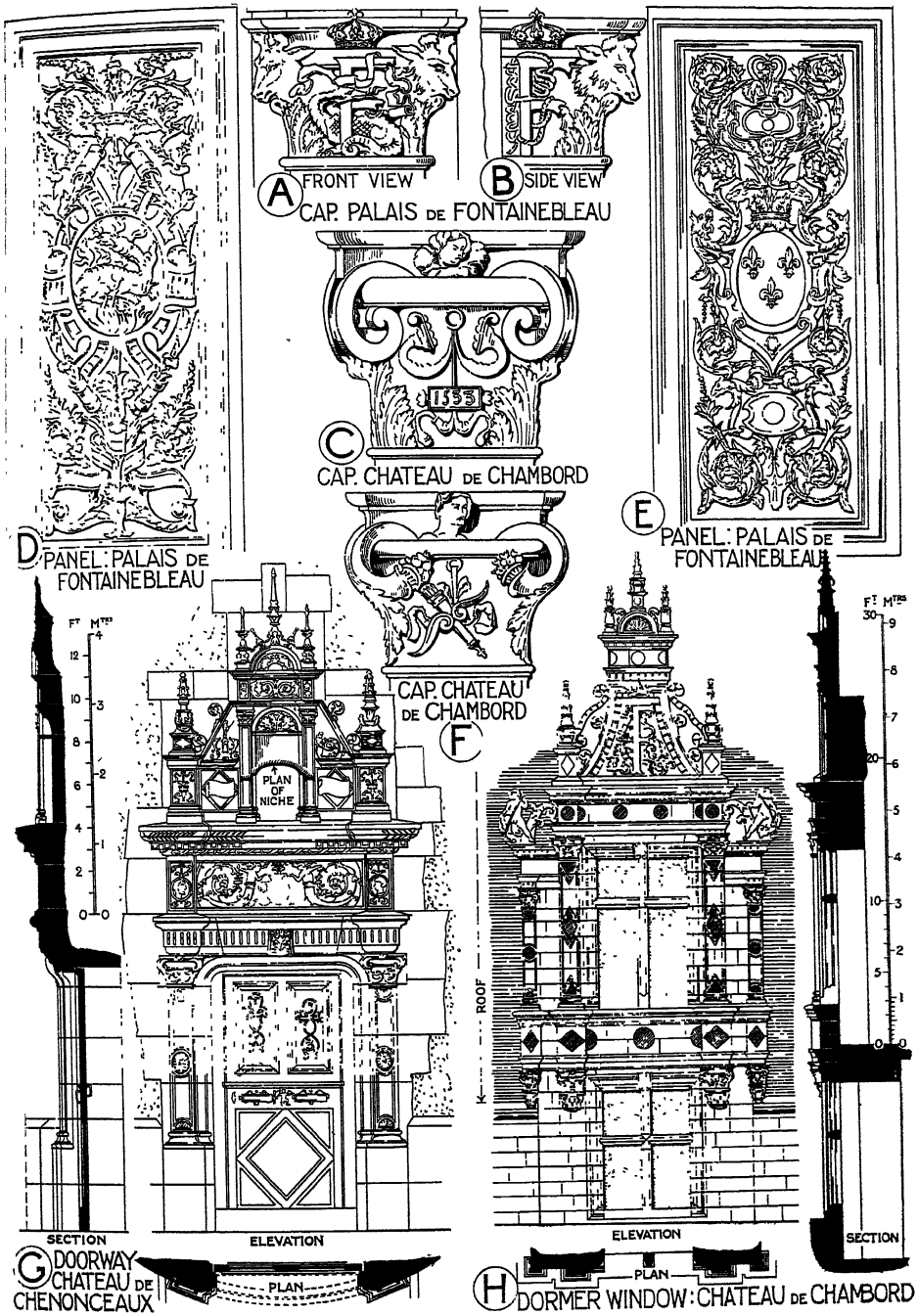
coupled columns and lofty windows, and the dome proper is triple in construction (p. 635 C). The inner dome, 175 ft. high, has a wide central opening, through which are seen the painted decorations of the middle dome, lighted by windows at its base. The external dome is framed of timber covered with lead, and crowned by a high lantern and cross, rising to a height of 350 ft. The construction differs considerably from that of S. Paul's, London (pp. 719 724[1]), where an intermediate brick cone supports the external stone lantern.

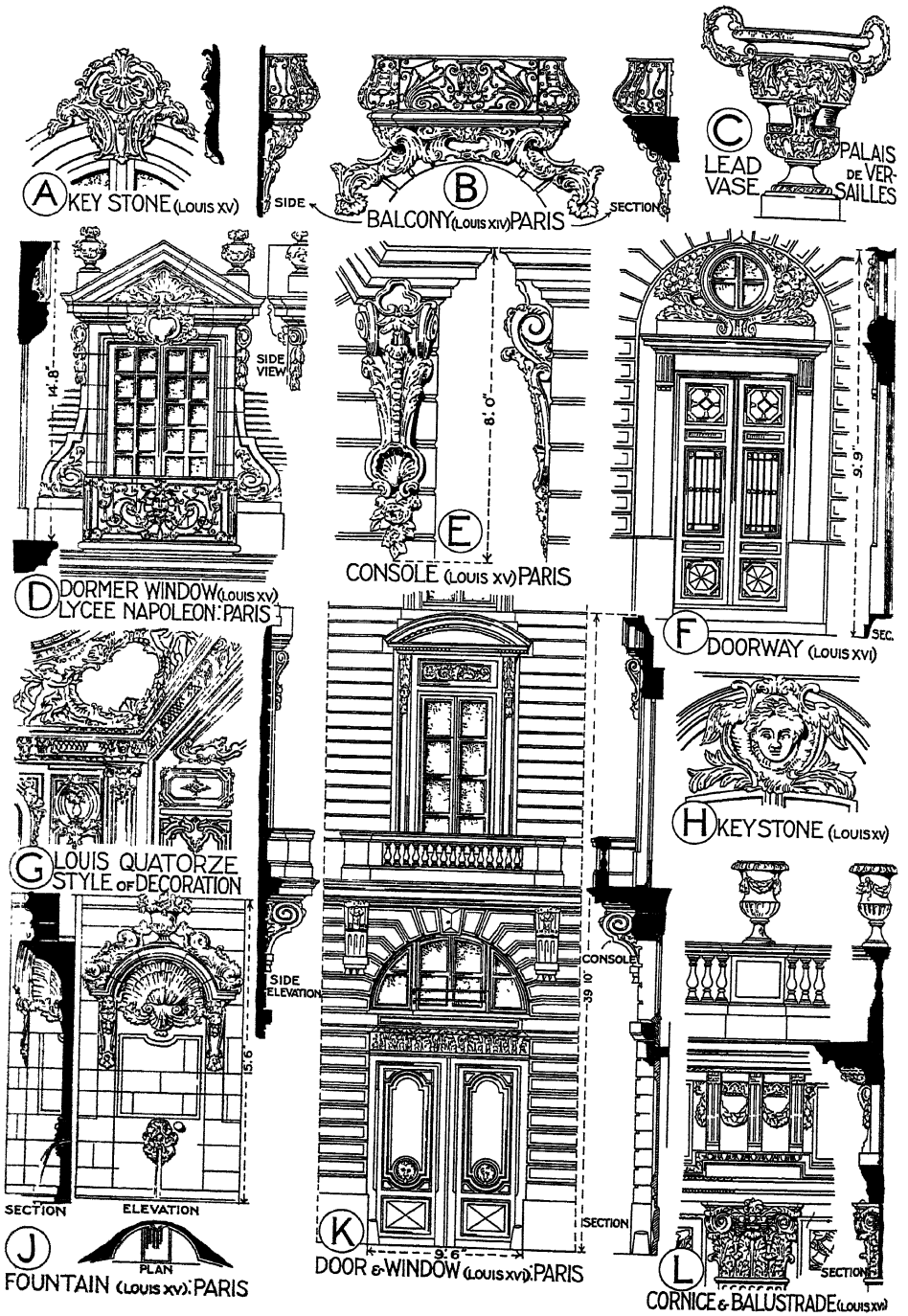
The **Panthéon, Paris** (A.D. 1757–90) (pp. 634 C, 635, 636 A), erected from designs by Soufflot, has a fine portico with unusual arrangement of columns leading to the main building, which is a Greek cross on plan (p. 635 D). The four piers which support the central dome were originally so slight as to threaten the stability of the structure, and were afterwards strengthened by Rondelet. The dome, 69 ft. in diameter, is triple in construction (p. 635 E), as in the Invalides, but has an outer dome of stone covered with lead (p. 634 C). The interior (p. 636 A) owes much of its elegance to the unusually slender piers, the fine Corinthian columns, and the large clear-story windows, invisible externally (p. 635 F), surmounted by the domical vaulting. The general effect has recently been enhanced by the coloured frescoes of foremost French artists. The exterior (p. 634 C) is striking by reason of its magnificent hexastyle portico of Corinthian columns, thrown into relief by the unbroken, windowless walls, whose only decoration is a continuous entablature with carved festoons. The graceful dome is somewhat marred by the appearance of weakness in the free-standing columns round the lofty drum—a defect avoided by the unerring genius of Wren in designing the dome of S. Paul's Cathedral (p. 720).

The **Madeleine, Paris** (A.D. 1806–42) (p. 636 C), designed by Vignon in imitation of an octastyle peripteral Roman temple, 350 ft. by 147 ft., has a "cella" or nave divided into three bays, covered by saucer domes with central openings for lighting the church, which has a most impressive interior, while the apse at the sanctuary end has a semi-dome. The imposing exterior depends largely for its effect upon its island site, which is further accentuated by the podium, 23 ft. high, on which the building stands, and by the magnificent rise of the approach up the wide expanse of steps. The Corinthian columns of the grand surrounding peristyle are built up in thin drums, the joints of which somewhat confuse the lines of the fluting. This peristyle supports an entablature in which the architrave is formed of voussoirs instead of a series of horizontal lintels, and the principal pediment has a sculptured tympanum.

MODERN ARCHITECTURE

Modern French architects, although assertive of their right to choose their own type of architecture, have, apart from certain sporadic outbursts, remained faithful to the Classical styles, and the École des Beaux-Arts has fostered a spirit of academic correctness in conformity with these precedents. Among the great buildings of the nineteenth century are the **Arc de Triomphe, Paris** (A.D. 1806), by Chalgrin; the **Library of S. Geneviève, Paris,** with astylar façade (A.D. 1843–50) by Labrouste; the **Louvre, Paris,** completed by Visconti (p. 637); the **Hôtel de Ville, Paris,** rebuilt in its original early Renaissance style by Ballu and Deperthes (A.D. 1871), besides a host of buildings in the provinces. The majority of modern buildings are designed on traditional Renaissance lines, though some, as the **Église du Sacré Cœur, Paris,** are revivals of the Mediæval style, while others show a daring departure


A FRONT VIEW
B SIDE VIEW
CAP. PALAIS DE FONTAINEBLEAU
1553
C
CAP. CHATEAU DE CHAMBORD
D PANEL: PALAIS DE FONTAINEBLEAU
E PANEL: PALAIS DE FONTAINEBLEAU
CAP. CHATEAU DE CHAMBORD
F
PLAN OF NICHE
SECTION
ELEVATION
G DOORWAY CHATEAU DE CHENONCEAUX
PLAN
K ROOF
ELEVATION
PLAN
H DORMER WINDOW: CHATEAU DE CHAMBORD
SECTION


A KEY STONE (LOUIS XV)
SIDE
B BALCONY (LOUIS XIV) PARIS
SECTION
C LEAD VASE
PALAIS DE VERSAILLES
14'-8"
SIDE VIEW
D DORMER WINDOW (LOUIS XV) LYCEE NAPOLEON: PARIS
8'-0"
E CONSOLE (LOUIS XV) PARIS
9'-9"
F DOORWAY (LOUIS XVI)
SEC.
G LOUIS QUATORZE STYLE OF DECORATION
SIDE ELEVATION
15'-6"
SECTION
ELEVATION
J PLAN
FOUNTAIN (LOUIS XV): PARIS
CONSOLE
3'-10"
9'-6"
K DOOR & WINDOW (LOUIS XVI): PARIS
SECTION
H KEYSTONE (LOUIS XV)
SECTION
L CORNICE & BALUSTRADE (LOUIS XVI)

from precedent, not wholly satisfactory, but probably representing only a passing national phase.

The **Opera House, Paris** (A.D. 1861–74) (p. 639), by Charles Garnier, is probably the most important of all modern buildings in France. The magnificent façade (p. 639 A) well conforms to the idea of the sumptuous treatment suitable for a national opera house. The broad steps lead to the portico with piers bearing many symbolic figures of poetry, music, drama, and allied arts. The loggia has boldly projecting balconies and large monolithic coupled columns, the flanking pavilions being crowned with segmental pediments, while under the entablature are circular windows and portrait-busts. Above is an imposing attic storey sculptured with festoons and gilded masks, supporting flanking groups of music and poetry, while beyond is seen the low dome over the auditorium. The ornate treatment of the interior is indicated by the imposing Escalier d'Honneur (p. 639 B, C), which is decked out with ornamental newels, pierced balconies, sumptuous colonnades, and arching roof.

The **Palais des Beaux-Arts, Lille** (A.D. 1892) (p. 640 A), by Bérard, and Delmas, designed on traditional French lines, has a recessed central portion and projecting wings with a rusticated and arcaded basement supporting a Corinthian Order with segmental and triangular pediments, and the usual steep hipped roofs over the central block and side wings.

The **Hôtel Rue du Cherche-Midi, Paris** (p. 629 E), is a characteristic example of a Parisian town house, with central entrance forming a driving way into an inner courtyard, which gives light and air to the surrounding apartments. The treatment of the ground floor windows and entresol, the consoles carrying the wrought-iron balconies, and the simple yet effective treatment of the upper portion are typical of the French treatment of modern architecture.

The **Petit Palais, Paris** (A.D. 1897–1900) (p. 640 B), designed by Charles Girault, is amongst all modern buildings perhaps superior to those mentioned. Its beautifully balanced plan, graceful elevations, with their refined and novel treatment of the Order, and the abundant use made of the best modern sculpture, both in the façades and on the skyline, render this one of the most imposing and pleasing of all modern French buildings.

4. COMPARATIVE ANALYSIS

(A comparative analysis of essential differences between Gothic and Renaissance architecture is given on p. 547. The architectural character of Italian and French Renaissance architecture has been considered (pp. 560, 627), and a Comparative Table of the two styles is here given.)

ITALIAN RENAISSANCE	FRENCH RENAISSANCE
A. **Plans.**—Severe Classic disposition rendered necessary by the narrow streets of Florence and Rome and the straight waterways of Venice (pp. 561 G, 603 E). A "cortile" or central open court is generally surrounded by a colonnade or arcade supporting the main walls to give ampler space for the important rooms of the "piano nobile" (pp. 558, 578, 603).	A. **Plans.**—The irregularity peculiar to Gothic buildings was occasionally retained as suitable to the exigencies of the country-side (p. 618 E). The typical town-house plan has a court enclosed on one side by the "corps de logis," flanked on either side by lower wings and cut off from the street by a screen wall (p. 625).

ITALIAN RENAISSANCE	FRENCH RENAISSANCE
B. **Walls.**—A city palace, as in Florence, Rome, and Venice, is principally seen from the street, and the architectural features were often only applied to the street façade. Straight façades, varied by Orders, arcades, and windows, were crowned by a deep cornice (pp. 561, 568, 592). Attics are rare, but an open top storey (belvedere) is a feature. Brickwork was used in large masses with ashlar facings, while ornament was confined to windows or Orders. Later buildings are faced with plaster (p. 557 F).	B. **Walls.**—A country château is seen on all sides, and picturesque grouping from every point of view was therefore sought (pp. 621 A, 622 A). The gables and prominent stone dormers of the early period (pp. 621, 622, 643 H) gradually gave place to pedimented and balustraded façades (pp. 624 A, 625 A). Pavilions crowned with steep independent roofs mark the centre and ends of façades (pp. 623 C, 625 A, F). Stone was the chief material, sometimes combined with red brick.
C. **Openings.**—Arcades, both in cortile and piazza, continued in use, as indeed had been the custom since the time of the Romans, affording shelter from the fierce rays of the southern sun. Symmetry, rather than convenience, determined the position of doors and windows (pp. 558, 568 A), round which ornament was concentrated, thus throwing these features into prominence. In Baroque buildings a return was often made to the astylar treatment, when exaggeration of detail marked door and window frames. The attic was unusual and the top windows were often set in a deep frieze or between consoles supporting the main cornice (p. 596 A).	C. **Openings.**—Arcades were not usual, owing to the northern climate. Doors of the early period often show Mediæval influence and are much elaborated (p. 643 G), but later are frequently treated plainly (p. 644 F, K). Gothic mullions and transoms continued, though changed in detail (pp. 618 C, 622 A, 643 H). Windows were often superimposed, but with the use of the Orders horizontal lines of the entablature prevailed (pp. 624 A, 644 D, K). Symmetry was so much considered that when there was a mezzanine floor with windows (p. 644 K), similar windows were added in the upper part of main apartments adjoining. The attic was a favourite feature, often with circular windows ("œils-de-bœuf"), as at the Hôtel des Invalides, Paris (p. 629 B, C).
D. **Roofs.**—Flat or low-pitched roofs are usual and roofs play no part in the design of buildings in narrow streets where they could not be seen, and even chimneys were masked, except at Venice (pp. 557, 568, 592). In the early period tiled roofs extended over the great cornice, but were hidden in later buildings by the balustrade (pp. 584, 596 A). Domes gave skyline to churches (pp. 556, 563, 577, 590, 604).	D. **Roofs.**—High roofs are usual with dormer windows and lofty chimney-stacks which give a picturesque skyline from a distance (pp. 618 D, 621 B, E, 622 A). The French "Mansard" roof, which gave more internal space, was favoured; while pavilions with independent roofs assumed the importance of towers (pp. 622 B, 623, 624 A, 625 A). Domes were employed in churches of the later period (p. 634).
E. **Columns.**—Pilasters, whether plain or carved with foliage, were used for their architectural importance as "Orders" and panel decoration was often omitted (pp. 567, 568, 584, 596). An "Order" often included two or more storeys, while in churches a single Order is the rule, as introduced by Palladio (pp. 584, 601).	E. **Columns.**—Pilasters, lozenge-panelled or carved with foliage, were used to ornament quasi-Gothic features, as at Chambord, where slate in the panels gives variety (p. 643 G, H). A separate "Order" was usually given to each storey, according to the practice of Vignola (pp. 622, 623, 624 A, 625 A, 626 A).

ITALIAN RENAISSANCE	FRENCH RENAISSANCE
F. Mouldings.—Mouldings of heavy crowning cornices followed Roman models, although showing much originality. String courses between storeys have only slight projection to give value to the top cornice, but the details of each Order were used in full (pp. 605, 607, 612).	F. Mouldings.—Gothic influence pervaded the early period and combinations of Classic and Mediæval mouldings were often used. Some cornices have unusually small members, while later mouldings gradually developed a distinctive character (pp. 643, 644).
G. Ornament (pp. 605, 606, 608, 612, 617).—Fresco and modelled plaster were much employed and in the early period the two were combined, as in the arabesques of Raphael. Frescoes were, however, sometimes out of scale with the architecture, and therefore deficient in decorative value. Later stucco work suffered in the same way and Venice has some extraordinary examples of its abuse. Interiors generally in the later period were unduly regulated by the features of Classic temple architecture without relation to requirements. Sculpture gradually lost its intimate connection with architecture and many extravagances were perpetrated in the Baroque period, but considerable originality is displayed, especially in the fountains of Rome (pp. 607, 608). Characteristic ornament is seen in panels (p. 612 E, H), capitals (pp. 605 A, B, C, 612 B, 617 H), balconies (pp. 592 G, 607 C, D, F, G, 611 B), chimney-pieces (pp. 605 H, 611 J), consoles (pp. 605 B, 606 G), ceilings (p. 617 G), monuments (pp. 608 J, L, 611 G, 612 D), and entablatures (pp. 612 G, J, 617 A, C).	G. Ornament (pp. 618 F, 626 B, 639, 643, 644).—Gothic wood panelling continued into the early period, and was often splendidly carved with arabesques, as at Blois; whereas in later work the scale suggested by the material was gradually lost. The Raphael style of decoration was introduced by Italian artists, as at Fontainebleau, and has continued to influence French art. Tapestry and hangings were superseded by the Louis XIV style of wood, papier-mâché, and stucco decoration in white and gold, which was also applied to furniture and every accessory, and thus gives fitness and unity to the interiors. Sculpture acquired increasing importance, and figure sculpture of great excellence appears in combination with modern French architecture. Other ornament is seen in panels (p. 643 D, E), capitals (p. 643 A, B, C, F), balconies (p. 644 B), vases (p. 644 C), keystones (p. 644 A, H), console (p. 644 E), walls and ceilings (p. 644 G), fountains (p. 644 J), and entablatures (p. 644 L).

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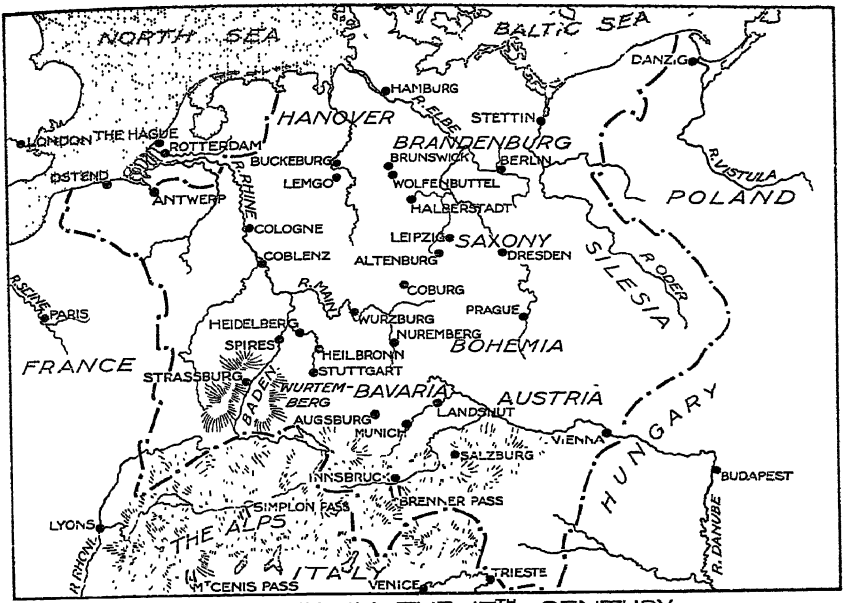
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GERMANY IN THE 17TH CENTURY

GERMAN RENAISSANCE

(See p. 288 for German Romanesque, and p. 482 for German Gothic. A general introduction to Renaissance architecture in Europe is given (p. 540).)

1. INFLUENCES

i. Geographical.—The central position in Europe of the country inhabited by the Teutonic peoples enabled it to receive Renaissance art from Italy on the south and from France on the west ; while, as the states in this great tract of country were independent, there could be no central and unifying influence as in France. The distance from the headquarters of the new movement was instrumental in deferring its introduction till 100 years later than in Italy. The States of Prussia, Hanover, Saxony, Bavaria, Würtemberg, and Baden were widely scattered as to latitude and longitude, and were distinguished by different geographical conditions of seaboard, rivers, and mountains, and this differentiated the architecture of the various districts, as in previous periods (pp. 288, 482).

ii. Geological.—The geological conditions naturally remained the same as during Romanesque and Gothic times (pp. 288, 482). Timber, brick, and stone continued to give their own character to the architecture, according to their local use ; thus moulded and ornamental brickwork was used in great variety in the alluvial plains of the north, while varieties of stone and timber are used according to locality and produce consequent differences.

iii. Climatic.—As in previous periods (pp. 288, 482), climate affected architecture, and the revived Classic forms were modified from those in

use in Italy to suit a more northern temperature; thus windows still continued to be large, roofs to be steep, and chimneys to be prominent features.

iv. Religious.—Martin Luther (A.D. 1483–1546) towers above all others as the dominating figure of the Reformation in Germany, and the day in A.D. 1517 on which he nailed to the church door in Wittenberg his famous theses against indulgences inaugurated a revolution in the religious life of Germany which culminated when Luther publicly burnt the Bull of Excommunication issued against him by the Pope. Luther's choice of High German for the translation of the Bible led to its adoption as the basis of the literary language of Germany, and it is significant that this literary aspect of the Reformation coincides with the Renaissance "Humanist" movement in German universities. A decree of the Diet of Spires (A.D. 1529), forbidding ecclesiastical changes, called forth the protest from Luther and his adherents which originated the name of Protestant. This was followed in A.D. 1530 by the Confession of Augsburg and by the Smalcaldic League of Protestant princes and cities for mutual defence against the House of Hapsburg. The stress and turmoil in religious thought of this period of upheaval allowed little opportunity for the erection of new churches, but it resulted in the transformation of those of previous periods to meet the needs of the reformed religion, in the ritual of which preaching became a powerful factor, and necessitated that increased space for seated congregations which brought about the introduction of galleries. Thus the reformers adapted old churches, while Romanists had no need to build new ones. The strife between Protestants and Catholics and dissensions between Lutherans and Zwinglians were finally followed by the counter-Reformation, which was re-enforced by the arrival of the Jesuits in Germany and by the counter-blast to Protestantism of the decrees of the Council of Trent (A.D. 1563).

v. Social.—Germany was at this time composed of divers kingdoms, principalities, electorates, duchies, ecclesiastical states, and imperial cities, subject to the different reigning houses of Hapsburg, Hohenzollern, Wittelsbach, and Oldenburg. It is therefore manifest that there could not be the same cohesion as in France, but much diversity and rivalry in social life and institutions, which also made for a corresponding diversity in artistic development. The Middle Ages had come to an end. The Holy Roman Empire was no longer predominant. Feudalism began to disappear; gunpowder changed military methods, and bands of mercenaries often replaced feudal troops. There were also various internal influences at work, such as the power of the great trading towns of the Hanseatic League, the position of the Guilds in civic government, and the attempt of the peasants to secure political freedom. The principal Renaissance factor was the influence of the universities, notably of Heidelberg, the chief seat of the Humanist movement. This was further strengthened by the invention of printing, while in the eighteenth century the literary works of Winckelmann, Goethe, and others aroused interest in the architecture of ancient Greece.

vi. Historical.—The succession of Charles V (Charles I of Spain) to the possessions of the Houses of Castile, Aragon, and Burgundy, as well as to the Low Countries, marks the beginning of German Renaissance. In A.D. 1516 he also obtained the two Sicilies, and on the death of Maximilian in A.D. 1519 he became the most powerful Emperor since Charlemagne. Various invasions by the Turks between the years A.D. 1529 and 1562 further complicated matters in Germany, increased the difficulties of the House of

Hapsburg, and were inimical to architectural activities. The wars of Charles V and the Catholics against the Protestant princes (A.D. 1546–55) were brought to an end by the Peace of Augsburg, which allowed each state to set up what religion it pleased, but made no provision for individuals who were of different religion from that of the prevailing government. This resulted in persecutions and culminated in the famous "Thirty Years' War" (A.D. 1618–48) between Catholic and Protestant princes. Christian IV of Denmark and Gustavus Adolphus of Sweden fought on the Protestant side under Frederick, the Elector Palatine, son-in-law of James I of England. France also took part in the war under Cardinals Richelieu and Mazarin, and when the Peace of Westphalia (A.D. 1648) once more provided for religious equality in each state, the war had ruined the position of Germany, depleted her population, and left France the leading nation in Europe. These wars not only arrested the development of architecture during the period of their actual prosecution, but also retarded building activities for some time after the conclusion of peace. In the latter part of the seventeenth century many German princes allied themselves with Louis XIV, until the rise of the House of Hohenzollern, when Frederick the Great was crowned first King of Prussia (A.D. 1701). In the nineteenth century many German princes formed a confederation of the Rhine under Napoleon, and the Kingdom of Germany ceased to exist, until in A.D. 1870 a German Emperor was crowned at Versailles. Since that time German ambition has known no bounds, and has everywhere, whether in politics, commerce, or colonisation, been prosecuted systematically and unscrupulously for her own political aggrandisement, until the Great War of A.D. 1914–19 drenched Europe in blood and once more shattered the position of Germany as a great European power.

2. ARCHITECTURAL CHARACTER

The general character of Renaissance architecture in Europe has been dealt with as a whole, with regard to those features which are common to it in all countries (p. 542). The style was introduced into Germany from France about fifty years after it had taken root in that country, and may be roughly divided into three periods:—(*a*) Early Renaissance (sixteenth century), chiefly consisting of Renaissance additions to Gothic structures, although some examples, such as the Heinrichsbau, Heidelberg, are of great size; (*b*) Middle Renaissance (seventeenth century), less Gothic and more formal in character, includes a number of town halls; (*c*) Late Renaissance (eighteenth century), including the Baroque style, during which the Orders were freely used in novel combinations. German Renaissance is remarkable for picturesqueness and variety in grouping, and for quaint and grotesque ornament, partly due to French influence under Henry IV, but it lacks the refinement of the French and approximates in some ways to our own Elizabethan architecture. It differs further from French Renaissance inasmuch as the buildings are generally in towns, whereas in France they are chiefly in the country (p. 628).

The Baroque in architecture (p. 545) did not at once get a footing in Germany, occupied as she was with ecclesiastical differences and with Luther's fulminations against Papal Bulls. Moreover, the Reformation went ahead as a religious movement, and the influence of the Jesuits, who had adopted this style, was slower and less noticeable, though none the less

insidious. There are, however, churches, convents, universities, and palaces throughout the different German states, particularly in those most accessible to Italy, which show that the coarser features of Baroque were seized upon with avidity by a people that has always given expression in monumental architecture to its materialistic ideas. The churches and palaces at Salzburg, Prague, Vienna, and Innsbrück, dating from the seventeenth and eighteenth centuries, have the usual and characteristic features of the style, modified to suit the taste of individual architects.

A note on modern German architecture is appended (p. 657).

3. EXAMPLES

SECULAR ARCHITECTURE

Heidelberg Castle (A.D. 1531–1612) (p. 653) well exemplifies different periods of the Renaissance in the various additions to the Mediæval castle p. 653 B). The general design suffers from over-ornamentation. The façades to the court have elaborately carved string courses with an Order to each storey, while somewhat coarse symbolical statuary forms throughout the most distinguishing feature of the design. There is a great watch tower (A.D. 1531–41) and an irregular court round which are grouped the Renaissance buildings (p. 653 A). The Saalbau (A.D. 1549) in the north-east corner shows Gothic features mingled with those of the incoming Renaissance (p. 653 D). The Heinrichsbau (A.D. 1556–63) on the east is interesting, even in its ruined state, for, with its picturesque façade of superimposed Ionic and Corinthian pilasters and half-columns, two-light windows, and niches with symbolic statues, it shows the close union of architecture and sculpture (pp. 653 C, 659 A, C). The Friedrichsbau (A.D. 1601–7), on the north side, is slightly more developed in character and is also ornately treated with niches containing statues of the Counts Palatine (pp. 653 D, 659 B), surmounted by two picturesque gables.

The **Gewandhaus, Brunswick** (A.D. 1590) (p. 655 B), has an eastern façade in the Renaissance style. An arcade of three-centred arches is surmounted by three storeys of Ionic, Corinthian, and Composite three-quarter columns, and above rises an immense gable of four storeys of Hermes pilasters, so much used in Elizabethan architecture, framed in by the typical side scrolls of the stepped gables of the period.

The **Rathhaus Portico, Cologne** (A.D. 1571) (p. 654 A), is a fine two-storeyed structure in a more than usually refined style, in which an arcade of semicircular arches with detached Corinthian columns is surmounted on the first storey by pointed arches, while Gothic tradition is also evident in the "rib and panel" vault within.

The **Rathhaus, Lemgo,** with mullioned windows and scrolled gables, and the **Town Hall, Solothurn** (A.D. 1550), with pilasters and entablature to each storey, are other characteristic buildings.

The **Pellerhaus, Nuremberg** (A.D. 1605) (p. 655), is one of the finest Renaissance buildings in that famous city. The rusticated lower part is surmounted by two storeys with pilasters and by a large gable in stepped stages finished off with scroll pinnacles and an ornamented centre-piece in which Hermes pilasters support a segmental pediment and statue. The court (p. 655 D) shows the combination of the Italian arcade with the large windows suitable to Northern Europe.

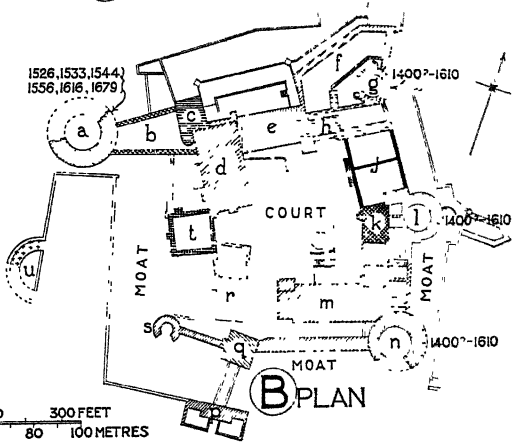
HEIDELBERG CASTLE



A THE CASTLE LOOKING N.

REFERENCE TABLE

a DICKER THURM
b ENGLISCHER BAU
c FASSBAU
d FRAUENZIMMERBAU
e FRIEDRICHSBAU
f ZEUGHAUS
g GLOCKENTHURM
h SAALBAU
j HEINRICHSBAU
k LUDWIGSBAU
l APOTHEKERTHURM
m OEKONOMIEBAU
n KRAUTTHURM
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q THORTHURM
r RUPPRECHTSBAU
s SELTENLEER
t BIBLIOTEKBAU
u RONDELL

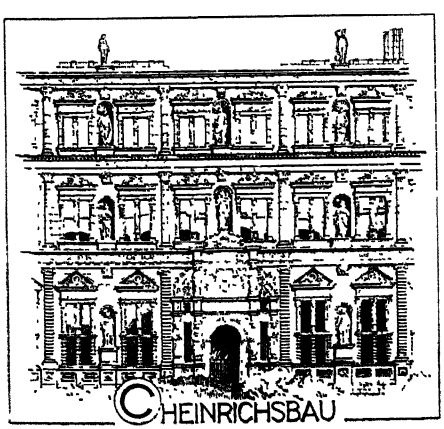


B PLAN

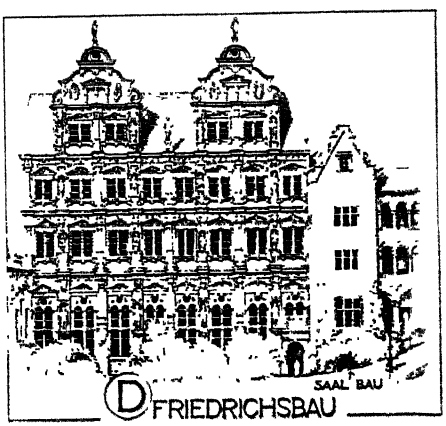
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DATES OF ERECTION

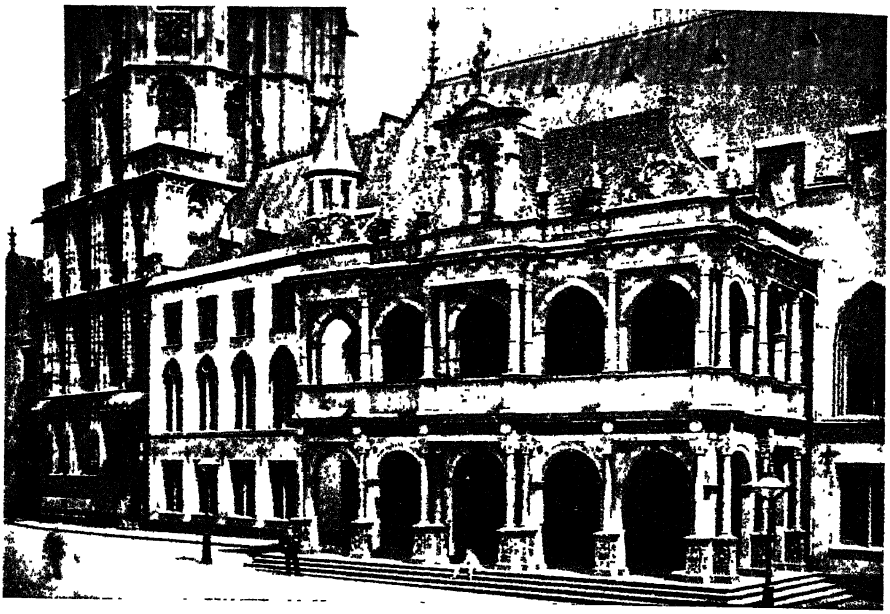
1508 – 1544
1520 – 1535
1524
1528 – 1547
1531 – 1541
1549
1556 – 1563
1583 – 1592
1601 – 1607
1612
VARIOUS DATES



C HEINRICHSBAU



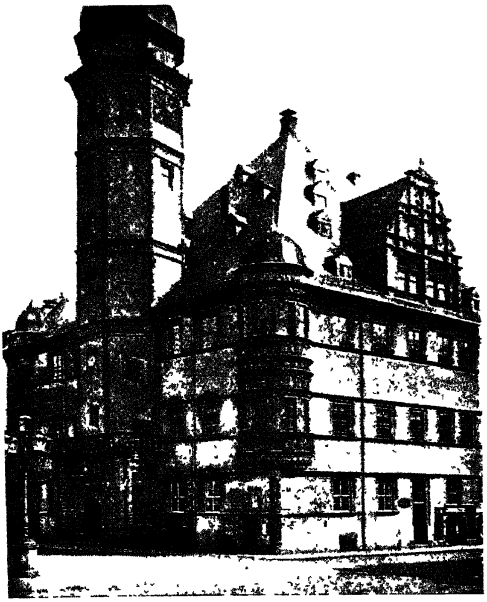
D FRIEDRICHSBAU



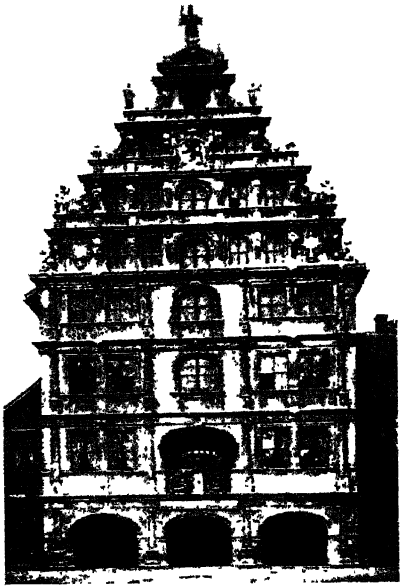
A. The Rathhaus, Cologne: Renaissance Portico



B. The Rathhaus, Heilbronn



A. The Rathhaus, Altenburg



B. The Gewandhaus, Brunswick

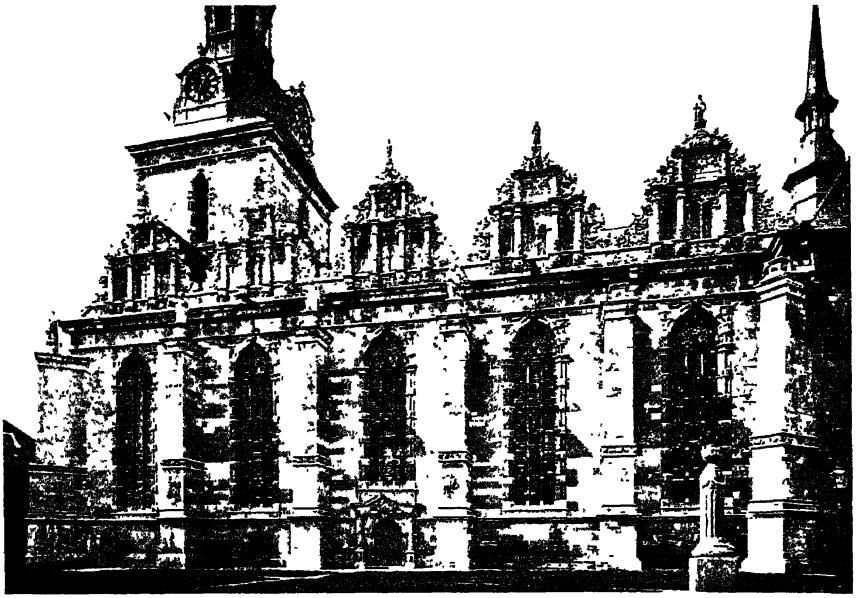


C. The Façade

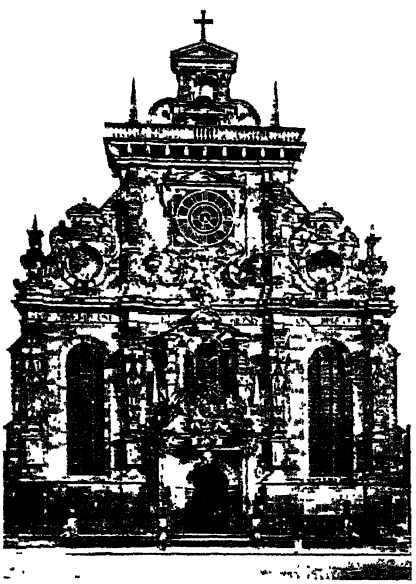


D. The Court

The Pellerhaus, Nuremberg



A. The Marienkirche, Wolfenbüttel



B. The Façade



C. The Interior

The Church, Bückeburg

The **Rathhaus, Altenburg** (A.D. 1562) (p. 655 A), has plain façades with a beautiful angle oriel, and main roof hipped back with a three-storeyed dormer. An octagonal stair-tower with clock completes the group.

The **Rathhaus, Heilbronn** (A.D. 1535–96) (p. 654 B), is a quaint building showing Gothic influence, with its arcade of stumpy columns enclosing a market, and side steps leading to the upper storeys; while a central panel bears the signs of the zodiac and a clock with figures and a bell; the steep roof has three storeys of dormer windows and an open turret.

The **Rathhaus, Bremen** (A.D. 1612) (p. 660), has a typical façade with Doric arcade, large windows, central and side scroll gables and many statues.

The Gateway, Halberstadt (A.D. 1552), the Castle, Stuttgart (A.D. 1553), the Rathhaus, Leipzig (A.D. 1556), the Zeughaus, Danzig (A.D. 1605), the Stadtwagehaus, Munster (A.D. 1615), and the Zwinger Palace, Dresden (A.D. 1711), are picturesque Renaissance buildings.

ECCLESIASTICAL ARCHITECTURE

There are, as in France, few important churches of the early period, as the Mediæval churches were still sufficient for a population depleted by the "Thirty Years' War" (p. 651). The new Protestant community, too, utilised existing churches, while the Catholics had no necessity to replace the churches thus lost. The Renaissance consequently largely found its ecclesiastical expression in fonts, screens, pulpits, and monuments.

The **Marienkirche, Wolfenbüttel** (A.D. 1608–23) (p. 656 A), is a curious transitional jumble of Gothic and Renaissance features, such as the doorway flanked by Ionic columns, tall three-light Gothic windows with elongated Corinthian columns as mullions, buttresses with Doric capitals, and two-storeyed gables faced with the Orders.

The **Church, Bückeburg** (A.D. 1613) (p. 656 B, C), has a fantastic and ornate façade with a curious mixture of Renaissance doorway, Gothic windows, and central clock surrounded by elaborate scroll-work, surmounted by a balustrade and bell-turret. The interior has Corinthian columns supporting a pointed arcade and "rib and panel" vault.

S. Michael, Munich (A.D. 1582), **Salzburg Cathedral** (A.D. 1614–28), and the **Neumünster, Würzburg** (A.D. 1711–19), are typical examples of Renaissance ecclesiastical architecture.

The **Frauenkirche, Dresden** (A.D. 1726–45), is notable as the product of the new-born desire to secure an uninterrupted internal space for preaching purposes. It is 140 ft. square, with a dome of stone, 75 ft. in diameter, resting on eight piers.

MODERN ARCHITECTURE

In the nineteenth century here, as in other countries, a period of revivals interrupted traditional architectural development. The Greek revival, consequent on the enthusiasm for Greek literature and art, was conspicuously carried out in Munich, Berlin, and Dresden; while many Neo-Gothic buildings, in town and country alike, reveal the natural German love of old Gothic art. This tendency was largely accentuated by the works of Goethe and his school, while the change in intellectual outlook, indicated by the philosophic writings of Kant, Schelling, and Hegel, and by the literary works of Lessing, Schiller, and Heine, has its counterpart in modern German architecture.

The Classic revival was introduced by the architect Klenze (A.D. 1784–1864), who is responsible for the Glyptotek, the Pinacothek, the Propylæa,

and the Walhalla, all in Munich. The Brandenburg Gate, Berlin (A.D. 1789), by Langhams, was inspired by the Propylæa, Athens, and the celebrated architect, Schinkel (A.D. 1781–1841), made use of Classical forms and details in his designs for the New Theatre, the Museum, and the Polytechnic School in Berlin. The Museum, Dresden (A.D. 1847), and Opera House, Dresden (A.D. 1878), are characteristic buildings by Semper, and the Parliament House, Vienna (A.D. 1883), by Hansen, is an imposing edifice in the modern quarter of Vienna.

The Gothic revival in the nineteenth century produced numerous secular buildings throughout Germany, notably castles in Bavaria, on the Rhine, and buildings in the cities.

4. COMPARATIVE ANALYSIS

(A comparative analysis of essential differences between Gothic and Renaissance architecture is given on p. 547.)

A. **Plans.**—The internal courtyard of the Mediæval period, often irregular in form (p. 658 B), was continued in castles and country houses, and the general picturesqueness was increased by balconies and external stair-turrets. The town Rathhaus frequently deviated from this traditional plan and was built in a solid block.

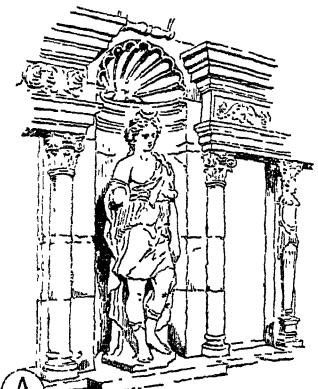
B. **Walls.**—Wall surfaces, both in brick and stone, were now relieved by Orders to each storey (pp. 653 C, D, 654 A, 655), while oriel windows, traditional from the Gothic period, were frequently introduced between the Orders, and walls were carried up in steep gables (pp. 655 B, C, 660) which give an irregular picturesque outline, in striking contrast to the restrained dignity of Italian palace walls.

C. **Openings.**—Arcades of columns supporting arches are only occasionally introduced (pp. 654 B, 660). Doorways are tricked out by a superfluity of ornament, including a mixture of columns, statuary, carving, and pediments of various forms (p. 659 J). Windows remain large and mullioned (p. 653 C, D) as in the Gothic period, and are crowned by grotesques, scrolly gables (pp. 655, 656, 659 E), or entablatures (p. 659 G), and in the later period by variations of the Classic pediment (p. 653 D). Oriel windows (p. 655 A, D) project both from façades and angles of buildings, and thus make another difference between German and Italian treatment.

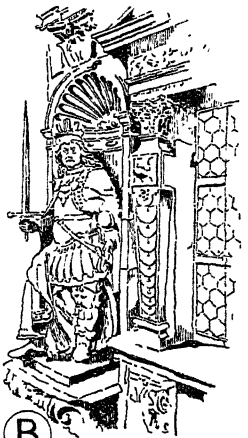
D. **Roofs.**—Large roofs containing many storeys (pp. 654 B, 655 A) are conspicuous features in town and country houses, and, as in the Gothic period, they served as drying-rooms in the crowded cities. There were two methods of treatment—(*a*) the ridge parallel to the street, as is usual in Nuremberg, with its rising tiers of dormer windows (p. 654 B); (*b*) the ridge at right angles to the street, as at Landshut and other places which favour fantastic gables (p. 655 B). The Pellerhaus, Nuremberg (p. 655 C), combines both methods.

E. **Columns.**—The Orders were freely employed as decorative adjuncts (pp. 653 C, D, 655 B, 656 A, 660). Columns, Hermes columns, and pilasters were overladen with carved ornament (p. 656 B), and were introduced without regard to traditional proportions or structural uses; they were even supported on corbels, as at Heidelberg, and ornate cornices and entablatures are used to mark off the storeys. Many novel treatments of capitals were also adopted (p. 659 D, F).

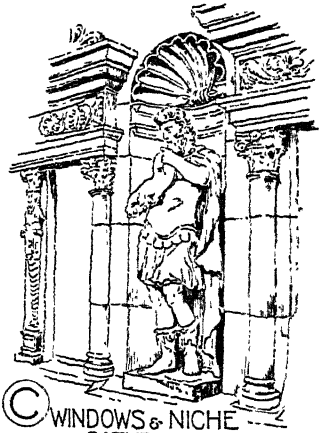
F. **Mouldings.**—Mouldings were characterised by boldness and vigour rather than by refinement (p. 659). Early Renaissance mouldings show Gothic influence, even to the retention of interpenetration of mouldings,



A WINDOWS & NICHE WITH DIANA: HEINRICHSBAU: HEIDELBERG CASTLE



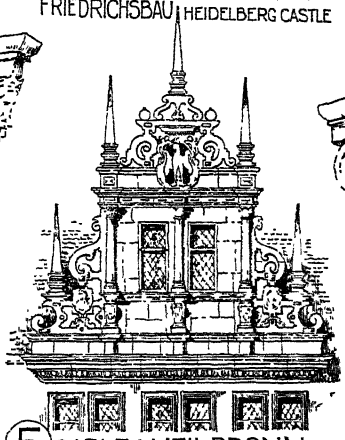
B CHARLES THE GREAT: FRIEDRICHSBAU HEIDELBERG CASTLE



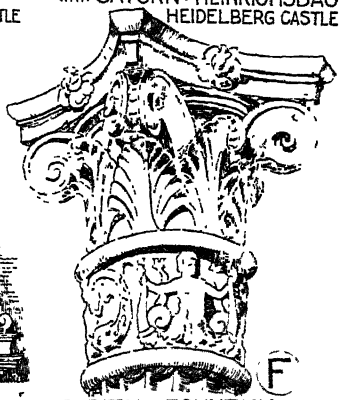
C WINDOWS & NICHE WITH SATURN: HEINRICHSBAU HEIDELBERG CASTLE



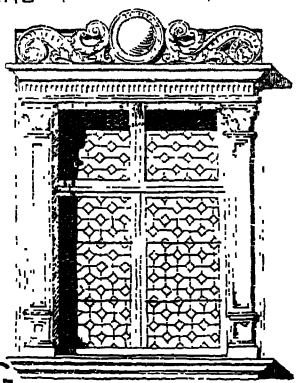
D CAPITAL FOUNTAIN OF SJEAN FREIBURG SWITZ^{D}



E GABLE: HEILBRONN



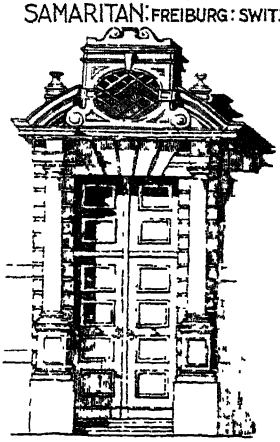
F CAPITAL: FOUNTAIN OF THE SAMARITAN: FREIBURG: SWITZ^{D}



G WINDOW: ERFURT



H CARTOUCHE: HEILBRONN



J DOORWAY S.MICHEL: MUNICH

which, however, were gradually discarded for the more correct mouldings of the Italian Renaissance.

G. **Ornament.**—Sculpture of a fanciful and grotesque character ran riot in the early sixteenth century (p. 659 H), especially at Heidelberg Castle, where Italian influence mingles with the native Gothic tradition (pp. 653 C, D, 659 A, B, C). Nothing richer in decorative sculpture was achieved than in the Stiftskirche, Stuttgart, where the architectural frame of Hermes pilasters, surmounted by winged cupids, encloses figures of the Counts of Würtemberg with their heraldic devices. The country also abounds in Renaissance monuments, such as that remarkable memorial of Duke Frederick in S. Maurice, Coburg, numerous chimney-pieces of an architectural character, with heraldic devices, sculptured well-heads, and other ornamental features. Renaissance decoration in window glass and fresco work, more especially of the Munich school, is exceptionally fine in the boldness of its draughtsmanship.

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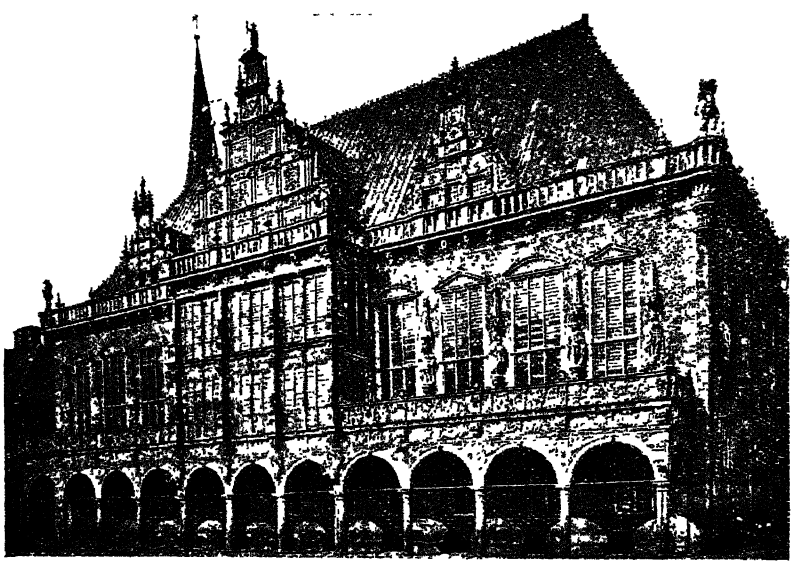
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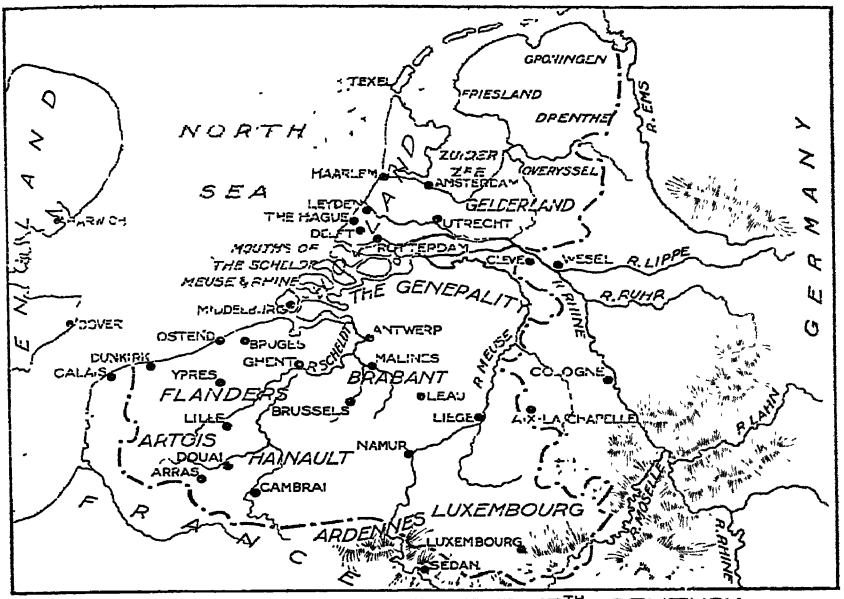
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THE RATHHAUS, BREMEN



THE NETHERLANDS IN THE 17TH CENTURY

BELGIAN AND DUTCH RENAISSANCE

(See p. 468 for Belgian and Dutch Gothic. A general introduction to Renaissance architecture in Europe is given (p. 540).)

1. INFLUENCES

i. Geographical.—The position of Belgium and Holland naturally continued, as in Mediæval times (p. 468), to lay them open to the dual influences of France and Germany; while with the shifting of European boundaries which brought the Netherlands within the dominions of Charles V, there ensued the additional influence of Spain. The great rivers, Meuse, Scheldt, and Sambre, which irrigate Belgium, and which suggested the construction of the numerous canals, promoted the development of the country and contributed to the richness of the soil and the success of the water-borne trade. The inland seas, such as the Zuider Zee, rendered the same service to the towns of Holland, where, moreover, the sea-coast, which was large in proportion to the mainland, provided that excellent harbourage at Amsterdam and Rotterdam which enabled the Dutch to carry on their extensive overseas trade and so to build up their colonial possessions; while their constant warfare with the water at home made them a seafaring people, and their prosperity is chronicled in the guild houses of this period.

ii. Geological.—The clay so easily obtainable for the making of bricks in the low-lying flats of these sea-girt countries, and more especially of Holland, still continued, as in the Mediæval period (p. 468), to give that subtle cha-

racter to the architecture which we recognise as Dutch. Later on, but more especially in Belgium, brick was largely superseded by or used in combination with the stone, granite, and slate of the Ardennes mountains, while black and white marbles give a sombre dignity to many choir screens and altar-pieces. Besides this the excellent forest timber gave full scope for the woodcarver's craft, which was used to such an extent in the lavish decoration of choir stalls, confessionals, pulpits, and organ " buffets " in Belgian churches.

iii. **Climatic.**—The climate of Belgium, as already described (p. 469), has greater extremes of heat and cold than that of England. In Holland the prevalence of the west wind, laden with humidity and driving unchecked across a flat country, resulted in the need for artificial protection against the elements, which is seen in the use of solid wooden shutters and of wind screens formed by trees, while steep roofs are required to throw off rain and snow.

iv. **Religious.**—Spanish rule under Charles V inevitably introduced religious persecution into the Netherlands, and this continued under the Duke of Alva, Viceroy of Philip II, and led in A.D. 1568 to revolt, which lasted till A.D. 1609. During this time the differences in religious tendencies between Belgians and Dutch were accentuated, so that the Catholic Belgians under the Duke of Parma, himself an Italian, rallied to Spain, and Jesuit influence is seen in many Baroque churches of Belgium. The sturdy Protestant Dutch broke away and constituted the " United Provinces " which were destined to develop into a great maritime and commercial power. It is significant of the earnestness of the Dutch religious outlook that they were chiefly intent on religious independence, and had little inclination for an artistic expression of their religion. This element in national character is evidenced in their barn-like churches, while the prominence given to preaching produced a wholesale transformation of church interiors, so that one may often see the pulpit towering above the altar, or rather the communion table, which was removed to one side of the nave, with seats for worshippers set round in a semicircle ; thus altering the character of the original Mediæval church.

v. **Social.**—In Belgium, trade activity may be traced in the erection of various guild houses, while such ports as Bruges and Ghent gave way to Antwerp, where the deep water provided a fine harbour for large vessels which carried on the trade with the rest of Europe, India, and the New World. This prosperity, though not permanent and growing, found its counterpart in the increased recognition of art, which is seen in the appointment of Rubens as Court painter in A.D. 1609.

Dutch trade, however, was much more vigorous and increased by leaps and bounds between the years A.D. 1625 and 1650, and the Dutch became the carriers of the world and even challenged the supremacy of our island-power at sea. This commercial success was not mirrored in monumental buildings, but was characteristically displayed in the town halls and in plain and serviceable houses for the wealthy burghers who were also patrons of art at this time. Rembrandt and many other Dutch painters contributed by their genius to the development of the golden age of painting in Holland.

vi. **Historical.**—The Netherlands have had a troubled history. After passing to the House of Hapsburg in A.D. 1477, Belgium became subject to Charles V in A.D. 1543, and afterwards to Philip II of Spain, whose troops under the Duke of Alva devastated the country ; this was followed by an unsuccessful revolt, and Belgium continued under the Spanish yoke till

the Treaty of Utrecht (A.D. 1713) handed her over to Austria. In A.D. 1794 the country was occupied by French republicans and in A.D. 1814 was united to Holland to form the "Kingdom of the Netherlands," and so remained until in A.D. 1830 it became an independent state.

Holland had an equally chequered career, and after a struggle which began in A.D. 1568 and lasted eighty years the Peace of Westphalia recognised (A.D. 1648) the Republic of the United Netherlands. The Dutch Navy was now at its zenith, and, owing to Cromwell's Navigation Acts, war ensued with England (A.D. 1652–54) and successful naval battles were fought by Van Tromp, de Witte, and de Ruyter. In A.D. 1674 William was elected "Stadtholder," defended the country against Louis XIV, and in A.D. 1688 he shared with Queen Mary the throne of England, and there introduced many Dutch ideas. In A.D. 1806 Holland did not escape annexation by Napoleon I, and in A.D. 1830, when separated from Belgium, it became an independent kingdom.

2. ARCHITECTURAL CHARACTER

The general character of Renaissance architecture in Europe has already been described (p. 542), and when we turn to Belgium we find buildings of the sixteenth, seventeenth, and eighteenth centuries, which, though similar in type to those of France, are characterised by greater freedom, often amounting to riotous extravagance in design, which produced a picturesque result, largely aided by the use of brick in conjunction with stone. The dwelling-house, its fittings and furniture, all alike received special attention, so that there is uniformity and completeness of treatment unknown in the Gothic period. Dutch Renaissance buildings reflect the matter-of-fact character of the people, and north German influence is visible, while the carrying trade with China and the East at the end of the seventeenth century introduced certain Oriental features, such as the bulbous dome. The Spanish occupation (A.D. 1556–1712) added a further foreign element of richness as in the tower roofs, to a style otherwise severely regular and plain. Some large buildings were erected during the Renaissance period in this north-west corner of Europe, but more especially in Belgium, while many Gothic buildings received Renaissance additions and alterations, notably in the churches of Holland, which were converted to Protestant use; and when one wanders through the streets and along the canal-sides of these old-world towns, one comes upon many charming bits of street architecture in bright-red brick with large window openings, stone courses, and gracefully designed iron ties (p. 671 c). Much originality was displayed in gable design, which possesses a characteristic quaintness and is thoroughly suited to the use of brick. These flat-fronted and gabled buildings stretch harmoniously along the water highways in which they are reflected.

The Baroque style (p. 545) was introduced in the seventeenth century, but one realises that the Protestant Dutch had little toleration for a style that was at one and the same time sensuous and Catholic. It is true there are a few towers, such as those of Haarlem, Amsterdam, and Middelburg, which are in the Baroque style, but for the most part the chief foothold of this style in the Netherlands was in Catholic Belgium. Here architecture had never been free from that coarse and realistic humour which characterises all Flemish art. Restraint too had previously been so largely disregarded that there was hardly any opportunity for revolt from a correct style; for in a country where all Renaissance architecture is exuberant and ornate

it is more difficult to differentiate between indigenous Belgian fancy and the important Baroque style. Nevertheless the Baroque was brought to Belgium from Italy with the velvets of prosperous Genoa, and, in Belgium as elsewhere, was pressed into church design by the Jesuits, who travelled from country to country as agents of Roman Catholicism. There is indeed no doubt as to the Baroque nature of the seventeenth-century churches of the Jesuits (p. 665 B), such as those at Antwerp, Bruges, and Namur, and the Béguinage church at Brussels. Catholicism at that period always brought Baroque architecture in its train, and thus in Malines, a great pilgrimage centre, the churches and their confessionals and choir stalls, with their opulently ornate interiors, supply splendid examples of Baroque architecture. Just as churches adopted the new style so did buildings for commerce and industry, and those stately guild houses of Antwerp and Brussels still stand, in spite of the savagery of modern war and of German occupation, as silent symbols of the enterprise of this small country. To Belgians the style was a natural method of architectural expression, and by the same token it soon fell with fatal facility into the unarchitectural forms of rococo ornament in the eighteenth century.

A reference to Modern Architecture is given on p. 669.

3. EXAMPLES

The **Town Hall, Antwerp** (A.D. 1565) (p. 665 A), erected by de Vriendt, is typical of the municipal activity and commercial prosperity of this great city port with its fine harbour for the merchant vessels which sailed the Western Seas. The building, with a façade over 300 ft. long, rises from a sturdy, rusticated ground storey surmounted by two stages of Doric and Ionic Orders, separating large mullioned windows, reminiscent of the Gothic period and crowned by a top storey forming an open gallery. This is surmounted by a hipped roof of deep projection giving a pronounced shadow and containing two tiers of dormer windows. The richly decorated centre rises as a pavilion with a high gable in diminishing stages in which are statue niches.

The **Town Hall, Ghent** (p. 476 A), part of which has been described under Gothic (p. 474), shows, in a strikingly comparative manner, the fundamental difference of the Gothic and Renaissance styles; for the Renaissance addition (A.D. 1595–1622), with superimposed Doric, Ionic, and Corinthian Orders supporting long horizontal entablatures, is in marked contrast with the rising lines of the older Gothic building alongside.

The **Town Hall, Ypres** (A.D. 1620) (p. 476 B), a beautiful little Renaissance building, has, like many other monuments in Belgium, now been destroyed by the Germans, who have been as ruthless in their destruction of the treasures of architecture as they have been regardless of the sanctity of treaties, a double perfidy to which Belgium and numbers of her buildings have been sacrificed.

The **Town Hall, Leyden** (A.D. 1579) (p. 668 G), is generally regarded as one of the most successful in Holland with the centre of the façade richly treated and crowned with a fantastic scroll-work gable, while its octagonal clock turret recalls the Moorish architecture of Spain.

The **Town Hall, Delft,** is in the main a Gothic building, to which Renaissance additions were made in A.D. 1618.

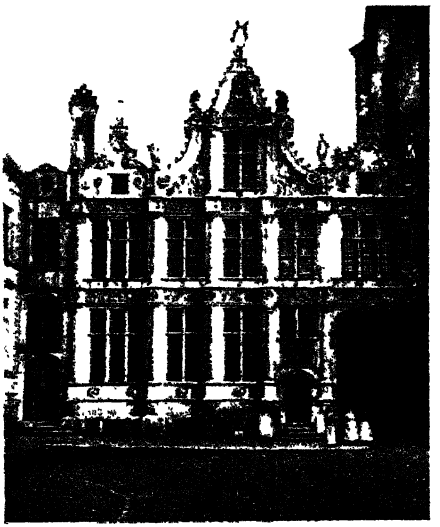
The **Town Hall, Haarlem,** was an old Gothic palace of the Counts of



A. The Town Hall, Antwerp



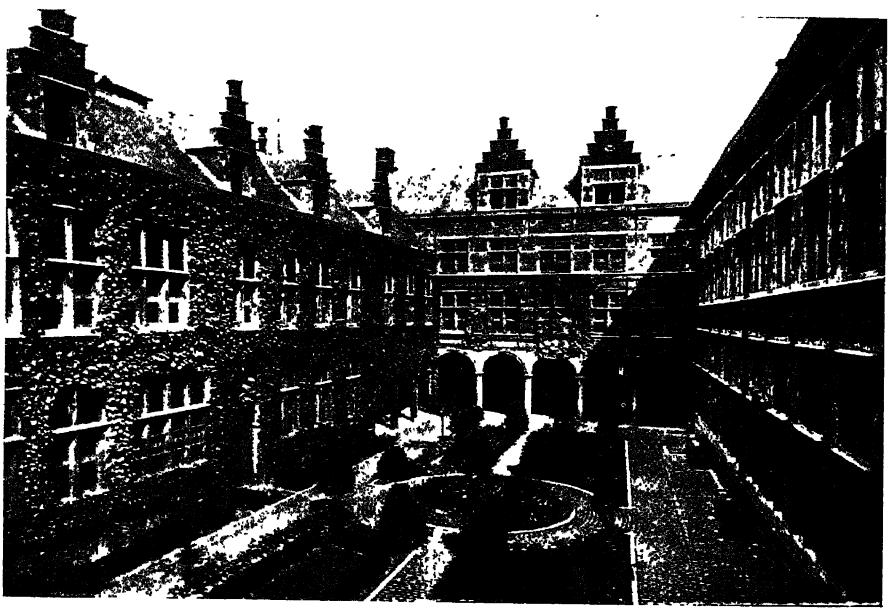
B S. Michel, Louvain



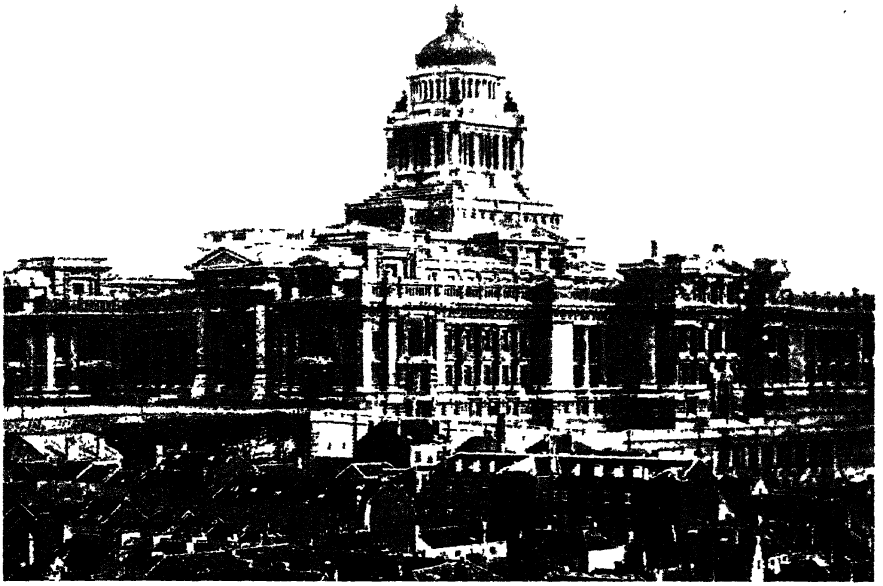
C. Maison de l'Ancien Greffe, Bruges



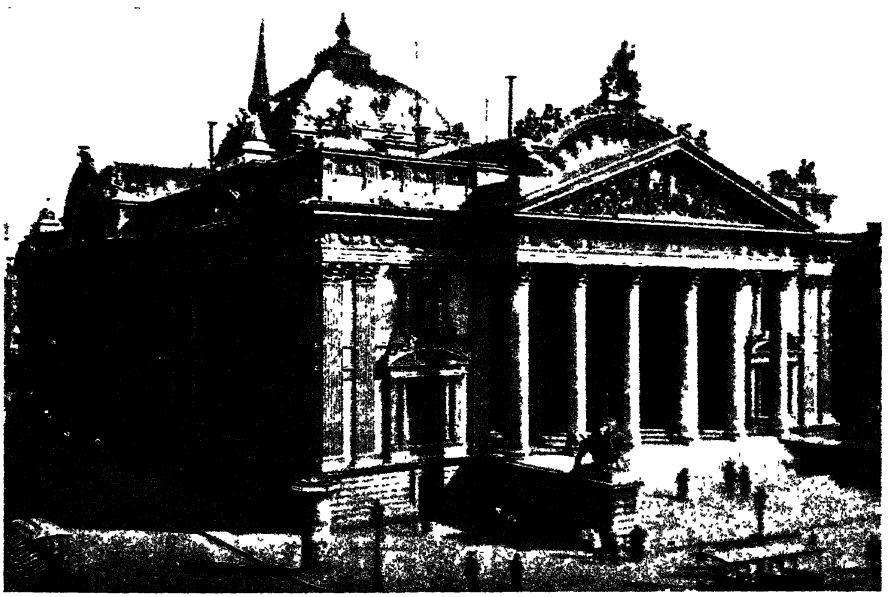
A. Guild Houses, Grande Place, Brussels



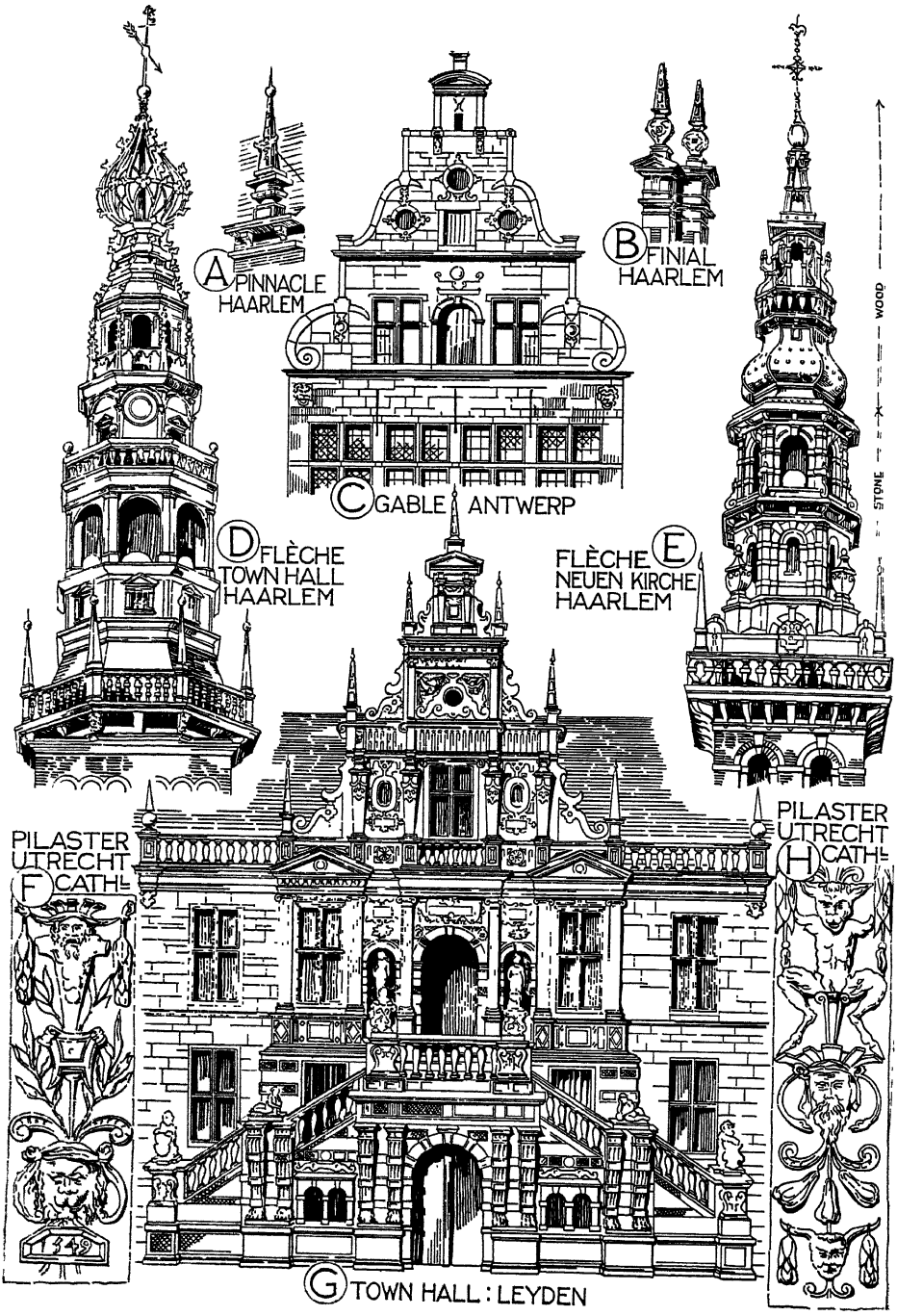
B. The Musée Plantin, Antwerp: Court



A. Palais de Justice, Brussels



B. The Exchange, Brussels


A PINNACLE HAARLEM
B FINIAL HAARLEM
C GABLE ANTWERP
D FLÈCHE TOWN HALL HAARLEM
FLÈCHE E NEUEN KIRCHE HAARLEM
PILASTER UTRECHT F CATHL
PILASTER UTRECHT H CATHL
1349
G TOWN HALL : LEYDEN
STONE
WOOD

Holland, remodelled in A.D. 1620 in the new style, and is surmounted by a fine wooden flèche covered with metal and slates.

The **Town Hall, Utrecht**, is late Renaissance with Doric and Ionic Orders, without any trace of Gothic feeling.

The **Town Hall, The Hague** (A.D. 1565), is picturesque and characteristic of the period, while the side façades show some lingering Mediæval influence.

The **Royal Palace, Amsterdam** (A.D. 1648–55), is imposing by reason of size rather than design, and was originally intended for a town hall. Its plain treatment of basement and two Orders of pilasters lacks imaginative feeling.

The **Guild Houses, Brussels** (p. 666 A), erected by the Archers (A.D. 1691), Skippers (A.D. 1697), Carpenters (A.D. 1697), Printers (A.D. 1697), Mercers (A.D. 1699), Butchers (A.D. 1720), Brewers (A.D. 1752), Tailors, and Painters, reflect the prosperity and importance of the fraternities of craftsmen during this epoch.

The **Guild Houses, Antwerp**, erected by the Archers and the Coopers (A.D. 1579), are buildings of a similar character.

The **Maison de l'Ancien Greffe, Bruges** (A.D. 1535) (p. 665 C), now part of the Palais de Justice, has a two-storeyed façade with quasi-Doric Orders, mullioned and transomed windows, and central gable with side scrolls, crockets, and figures. The Court Room (p. 672) is famous for its magnificent carved chimney-piece executed to commemorate the "Peace of Cambrai" and the independence of Flanders.

The **Hôtel du Saumon, Malines** (A.D. 1530), the **Palais de Justice, Liège** (A.D. 1526), and the **Mauritzhaus, The Hague** (A.D. 1630), are other very typically Renaissance buildings, but all are surpassed in interest by the **Musée Plantin, Antwerp** (A.D. 1550) (pp. 666 B, 671 D), which is a unique example of the combined dwelling-house and business premises of a Flemish merchant prince of that period.

The "**Béguinage,**" **Bruges**, planned for a community of women, as a town within a town with church, dwellings, and offices all within an enclosing wall, is an example of an institution which is peculiarly Belgian.

MODERN ARCHITECTURE

The **Palais de Justice, Brussels** (A.D. 1866–83) (p. 667 A), a Neo-Grec design by Polaert, is one of the most remarkable modern buildings in Europe in the extent and completeness of its plan and the monumental character of its pyramidal form on a dominating site. It stands four-square on a height overlooking the city, and has imposing central entrance and side wings connected by Doric colonnades, while above rises the colonnaded tower surmounted by a circular peristyle supporting the dome. It is said to have cost nearly two million pounds sterling, and the little capital city has here shown a public spirit which is a noble example to cities of greater wealth and importance.

The **Exchange, Brussels** (A.D. 1874) (p. 667 B), indicates the academic teaching of the École des Beaux-Arts, Paris. The entrance portico of Corinthian columns, sculptured pediment, and low square dome are the outstanding features of this well-balanced design, which is typical of many modern buildings in Brussels.

S. Michel, Louvain (A.D. 1650) (p. 665 B), is a good example of a Baroque façade (p. 664), with superimposed Ionic and Composite columns, broken

pediments, and enormous side scrolls masking the aisle roofs and supporting lofty pinnacles.

4. COMPARATIVE ANALYSIS

(A comparative analysis of essential differences between Gothic and Renaissance architecture is given on p. 547.)

A. **Plans.**—The internal planning of Gothic churches was often transformed to suit changes in ritual, but this applies more especially to Holland. New churches were not built till late in the period, and then chiefly in Belgium, where they followed the ordinary Renaissance model or affected the newer Baroque freedom in plan. In secular architecture, plans indicate a growing regard for domestic convenience, while the purpose for which the new town halls and guild houses were designed is seen in the large rooms of assembly which were now required. The science of elaborate symmetrical planning for public buildings reached its greatest development in the Palais de Justice, Brussels.

B. **Walls.**—Walls, decorated with Orders and pierced with large windows (pp. 656, 666), were of stone or brick, or a combination of both. They lack the pronounced horizontal cornices of Italy, and are instead generally finished off by scrolly gables, often containing the crane or hoist. They are picturesque in appearance, often Baroque in outline, and over-ornate in detail (p. 665 B).

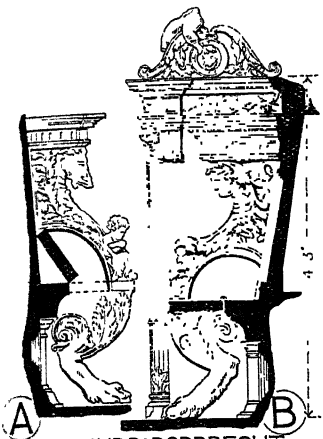
C. **Openings.**—Arcades were unusual, because unnecessary owing to the absence of that strong sunlight which made them universal in Italy. The Italian method was, however, sometimes followed, as in the courtyard of the Musée de Plantin, Antwerp, where arcades served as covered ways between the domestic and business premises (p. 666 B). Doorways display much fertility in design, and were enclosed by the Orders and often surmounted by pediments with niches, statuary, and heraldic carving (p. 671 E). Window openings still needed to be large, as in the previous period; mullioned and transomed windows were still favoured, and, with their architectural treatment, they often occupied a large part of the wall surface (pp. 666, 668).

D. **Roofs.**—The high-pitched roofs suitable for a northern climate are utilised for storage, and the gables enclose the crane for hoisting goods, which is so characteristic and useful a feature in the houses of the trading families of the Netherlands (pp. 668 C, G, 671 C). Dormer windows, storeyed spires and chimney-stacks break the roof surface (pp. 666 B, 668 D, E).

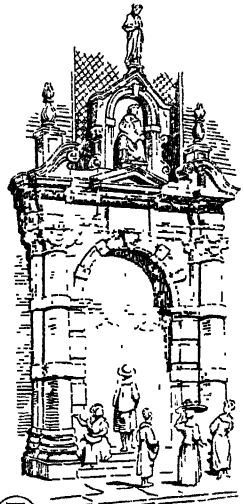
E. **Columns.**—The Orders, which play a conspicuous part in the design, often show great elaboration of detail in rustication, panelling, and grotesquely carved capitals (pp. 665, 668 G, 671 G). and many novelties in treatment were introduced when the Baroque style came into fashion.

F. **Mouldings.**—Mouldings have the same tendency to coarseness exhibited in the Gothic period; but the mouldings of rood lofts and other church fittings, which are executed in marble or wood, often display greater refinement (pp. 668, 671).

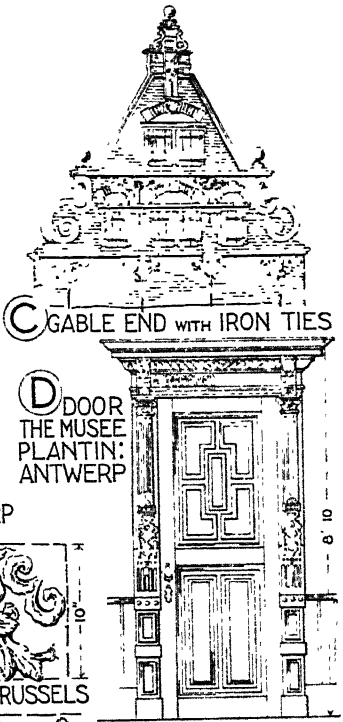
G. **Ornament** (pp. 668, 671).—Ornament is seen in church fittings (p. 671 A, B), carved panels (pp. 668 F, H, 671 F), stained glass, staircases (p. 671 H), doors (p. 671 D), and household fittings and furniture (p. 672). The High Altars, baldachinos, rood lofts. choir screens, organ cases, pinnacles, finials (p. 668 A, B), pulpits, canopies, and confessionals, with their wealth of carved ornament (p. 671 J, K), form some of the most notable achievements of the woodcarvers' craft in Europe. The remarkable "tabernacle" in S. Leonard,



A B BENCH-ENDS: DORDRECHT



E DOORWAY: ANTWERP



C GABLE END WITH IRON TIES

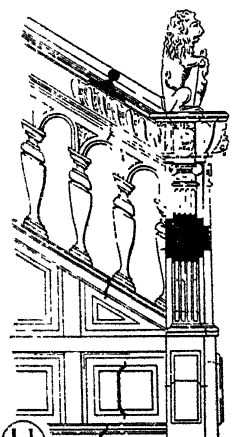
D DOOR THE MUSEE PLANTIN: ANTWERP



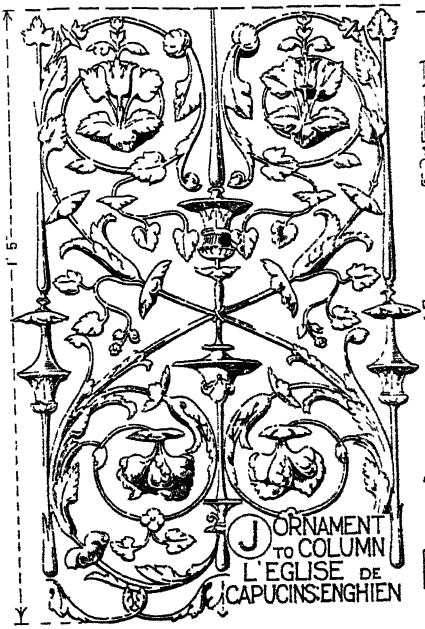
G CAPITAL FROM THE MONUMENT OF GUILLAUME DE CROY, L'EGLISE DES CAPUCINS · ENGHIEN



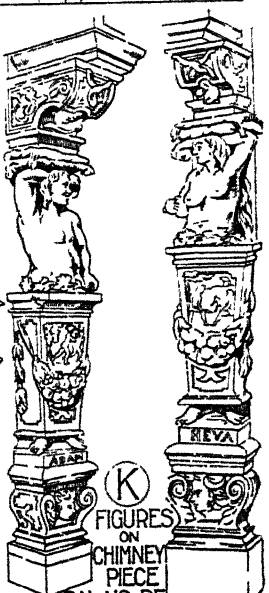
F FROM CHIMNY PIECE: MUSEUM: BRUSSELS



H STAIRCASE: MUSEE PLANTIN: ANTWERP



J ORNAMENT TO COLUMN L'EGLISE DE CAPUCINS: ENGHIEN



K FIGURES ON CHIMNEY PIECE IN PALAIS DE JUSTICE : ZALT BOMMEL

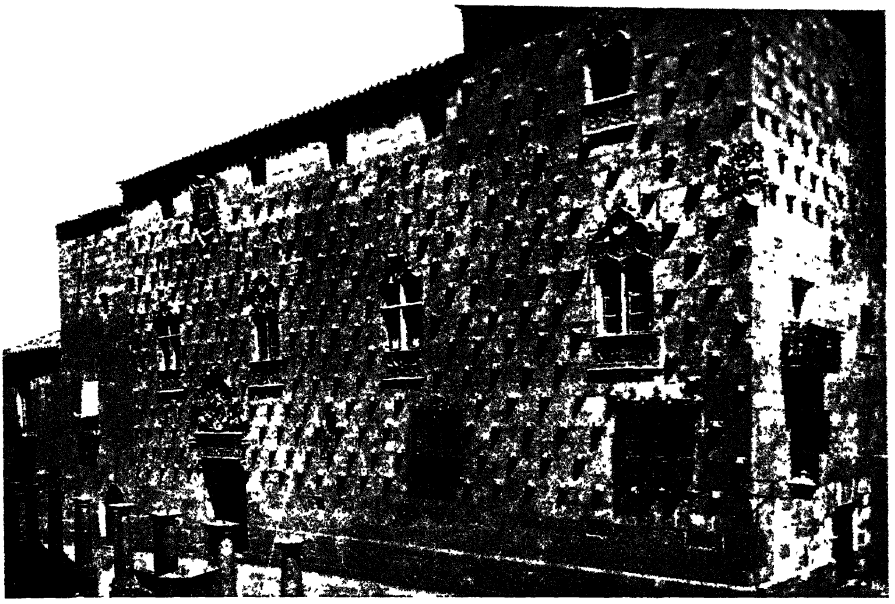
iron ore of the northern mountains gave an impetus to the development of decorative ironwork.

iii. Climatic.—The climate varies, as in the Gothic period (p. 525), from intense cold of the table-lands in the north to tropical heat in the south, and, owing to the general sunny character of the Peninsula, there is a prevalence of small windows, flat roofs, and open " patios," or courtyards. In the new Spanish colonies of South America, the tropical climate was not unlike that of Spain, and was thus favourable to the reproduction there of similar architectural features to those of Spain. Under such climatic conditions the Baroque style, which flourished during the later Renaissance in Spain, was peculiarly acceptable to the voluptuous taste of people who basked in the tropical heat, and revelled in the luxuriant vegetation under the southern sun.

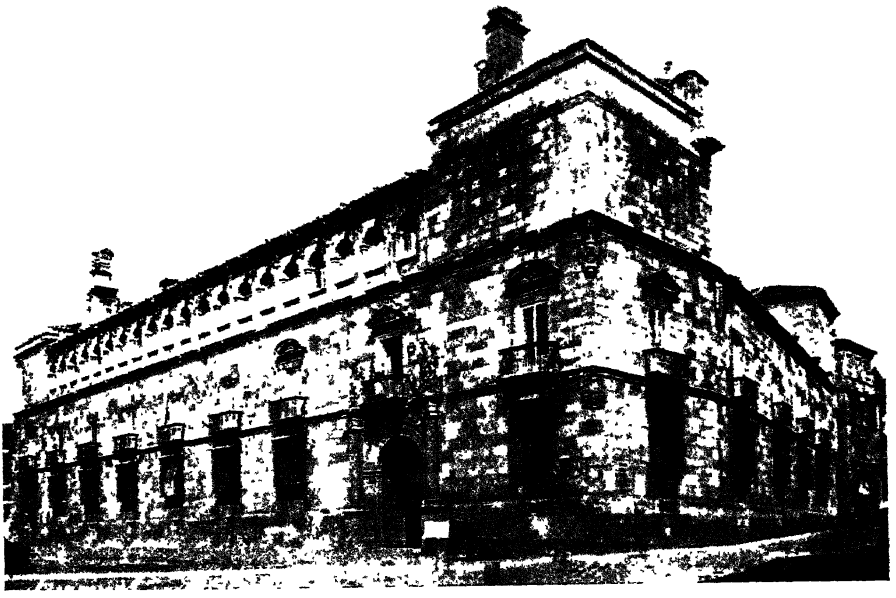
iv. Religious.—The Reformation obtained no hold whatever in Spain, for the religious and racial struggle between Christianity and Mahometanism formed a bond of union amongst all Christians, and so left little opportunity for Christian internecine strife. The final expulsion of the Moors, after the fall of Granada (A.D. 1492), resulted in a revival of ecclesiastical building, and many fine Renaissance churches were erected in the hitherto Moorish districts. The counter-Reformation is here signalised by the activities of the Jesuit order founded by the Spaniard, Ignatius de Loyola, and the religious zeal of this order is responsible for many magnificent Baroque churches and convents throughout the country.

v. Social.—Goths from North Europe and Moors from North Africa were the most potent elements in the mixed population of Spain, and these warring influences are visible in the architecture. The marriage (A.D. 1469) of Ferdinand of Aragon and Isabella of Castile began that fusion of the different states which resulted in the consolidation of the Kingdom of Spain. In A.D. 1512 Ferdinand conquered the Kingdom of Navarre, which was incorporated with Castile, and thus the whole of Spain was joined under one rule, and during the annexation of Portugal (A.D. 1580–1640) the Spanish Kingdom covered the whole peninsula. Under the despotism of Philip II Jews and heretics were persistently persecuted. Under Philip III (A.D. 1598–1621) the Moriscoes were driven out of the country, and this proved a great loss, both in handicrafts and commerce, to Southern Spain, for their industry had largely contributed to its prosperity. After the invasion by Napoleon many internal revolutions followed which have not been favourable to architecture.

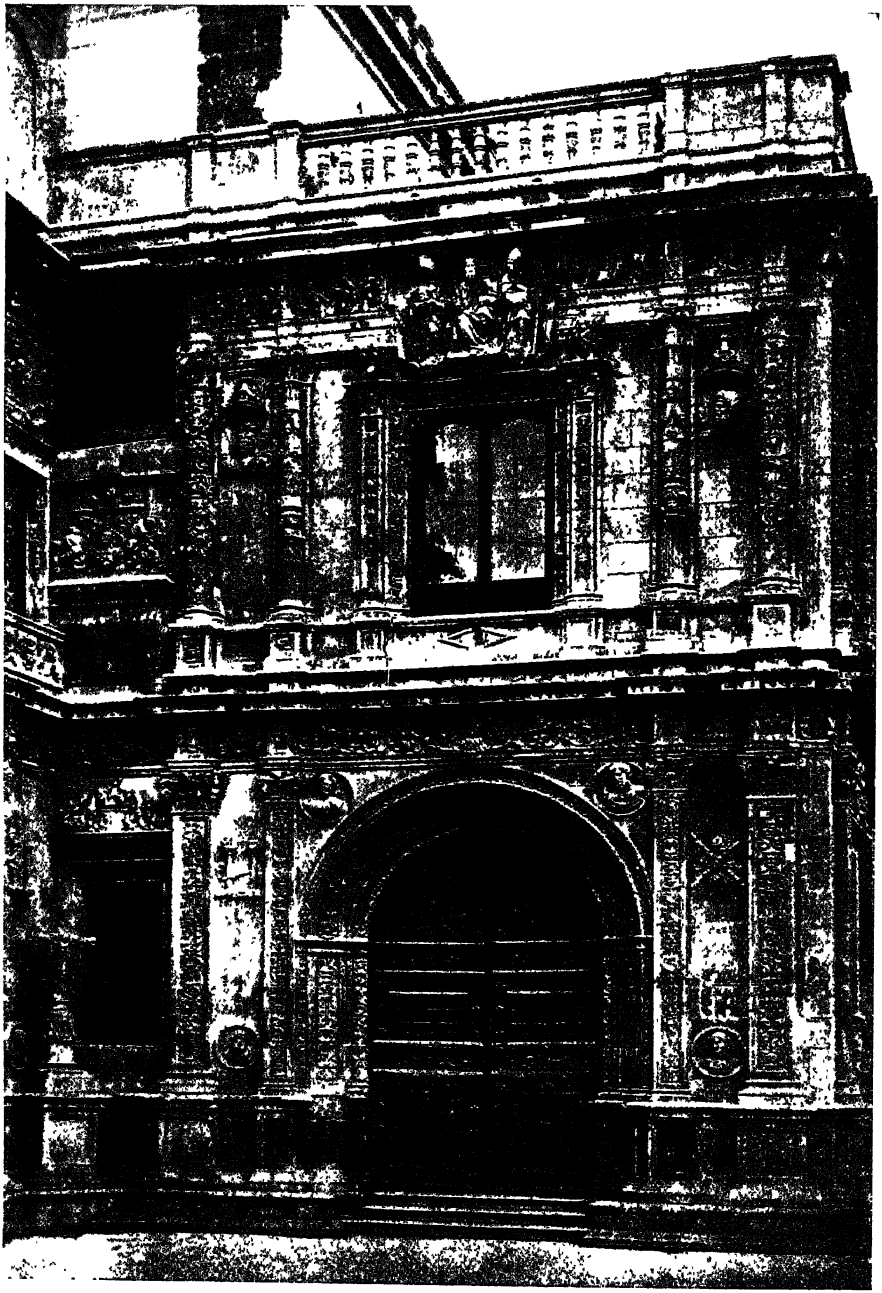
vi. Historical.—In the latter part of the fifteenth century the power of Spain gradually increased until, under the Emperor Charles V (A.D. 1516–56), she became the chief power in Europe. The Turkish occupation of the Levant, which closed the usual trade routes to the East, had promoted that spirit of maritime enterprise in Spain and Portugal which led to the great discoveries of new lands in the West and thus brought increased riches to the Peninsula. In A.D. 1486 Diaz discovered the Cape of Good Hope; in A.D. 1492 Columbus discovered the West Indies, and in A.D. 1498 the continent of America, while in A.D. 1497 Vasco da Gama carried Portuguese trade to India. The extent of the Spanish dominions in Europe was due in the first place to a succession of marriages, as a result of which the Emperor Charles V reigned over Spain, the Netherlands, Sardinia, Sicily, Naples, Germany, and Austria, and to these hereditary dominions he added by conquest Mexico, Peru, Chile, and Tunis, and proved himself the most powerful Emperor since Charlemagne. This vast empire was held together by



A. Casa de la Conchas, Salamanca



B. Casa de los Guzmanes, Leon



CASA DE AYUNTAMIENTO, SEVILLE

his skill in government and by the excellence of the Spanish army, of which the infantry was the finest in Europe. Philip II checked the power of the Turks in A.D. 1571 by winning the great naval battle of Lepanto, but his harsh and despotic rule alienated the Netherlands; while the expedition against England ended in the defeat of the Armada in A.D. 1588. Provinces were gradually lost, until in A.D. 1648 the power of Spain was shattered by the Peace of Münster. The War of the Spanish succession (A.D. 1701–14), terminated by the Peace of Utrecht, resulted in the loss of Gibraltar, as well as of the Spanish dominions in Italy and Flanders. At the commencement of the nineteenth century Napoleon's invasion led to an outburst of national resistance, when, with the powerful aid of the armies of Great Britain under Wellington, the French were finally driven out of Spain after the battle of Vittoria (A.D. 1813), and during the Peninsular War the Spanish colonies in America had revolted and were eventually recognised as independent.

Then later in A.D. 1898 the war with the United States left Spain denuded of all her former glorious colonial empire.

2. ARCHITECTURAL CHARACTER

The Renaissance in Spain was based on the same general principles as in other European countries (p. 542), and its growth may be divided into three tolerably distinct phases, determined by the characteristics predominant in the different periods.

(*a*) *The Early Period* (A.D. 1492–1556), which began with the fall of Granada, is notable for the grafting of Renaissance details on to Gothic forms, and was influenced by the exuberant fancy of Moorish art. The resultant style was as rich and poetic as any in Europe, and is frequently known as Plateresque (*platero* = silversmith), from the minuteness of its detail and its similarity to silversmiths' work which itself had received a great impetus through the importation of precious metals from the New World.

(*b*) *The Classical Period* (A.D. 1556–1650) was marked by a closer adherence to ancient Roman art, and under the influence of Berruguete (d. A.D. 1560) and Juan de Herrera (d. A.D. 1597), a pupil of Michelangelo, much of the spontaneous picturesqueness of the previous period was lost.

(*c*) *The Late Period* (A.D. 1650–1800) was characterised by a reaction from the correct formalism insisted on by Herrera and his disciples. This resulted in the use of fantastic forms too often divorced from good taste, but there was also considerable originality and great daring in design. Baroque Architecture, sometimes known as "Churrigueresque," after the architect who introduced it into Spain, must not be regarded as merely fantastic and destitute of artistic value (p. 545). It is of its nature a style that would be peculiarly easy of adoption in a country which had always indulged in a free treatment of architecture, on account of the prevalence of Moorish craftsmen who introduced Moslem decoration, even into Christian churches. This same freedom of spirit is again seen in the unique Plateresque work of the early period which Spanish architects would seem to have borrowed from the silversmiths, whose craft flourished greatly on the silver and precious stones from the New World. It is thus in no way surprising that Baroque should add yet another element to the complexity of the architecture of Spain. So spontaneous was the response of Spanish architects to the Baroque revolt from ultra-severity of style, that this architecture of the curved line

found a footing in all parts of the Peninsula. The style is well seen in Granada Cathedral (west façade A.D. 1667), the Cathedral of Santiago da Compostela (west façade A.D. 1738), buildings at Seville, Cordova, Murcia, Valencia, Salamanca, Valladolid, Toledo, Loyala (near Vittoria), the gardens of the Palace of La Granja (A.D. 1727), and chapels, altars, and fountains all over the country, not forgetting the numerous buildings erected in the Spanish colonies in South America.

Modern architecture here, as elsewhere, proclaims itself by the revival of all previous styles, and is chiefly to be found in the commercial buildings of the larger towns, while recently there have been many attempts at the fantastic innovations known as "l'art nouveau."

3. EXAMPLES

SECULAR ARCHITECTURE

The **Palace, Guadalajara** (A.D. 1461), and the **Collegio de San Gregorio, Valladolid** (A.D. 1488–96), both have "patios" in which are mingled Moorish, Gothic, and Renaissance detail, showing the complexity of treatment in the transition period.

The **University, Alcala de Henares** (A.D. 1533), with its three "patios," characteristic windows with side scrolls and iron grilles, and arcaded upper storey, and the neighbouring **Archbishop's Palace**, with the spreading bracket capitals of its fine "patio," both exhibit in a special degree the lace-like character of Plateresque work.

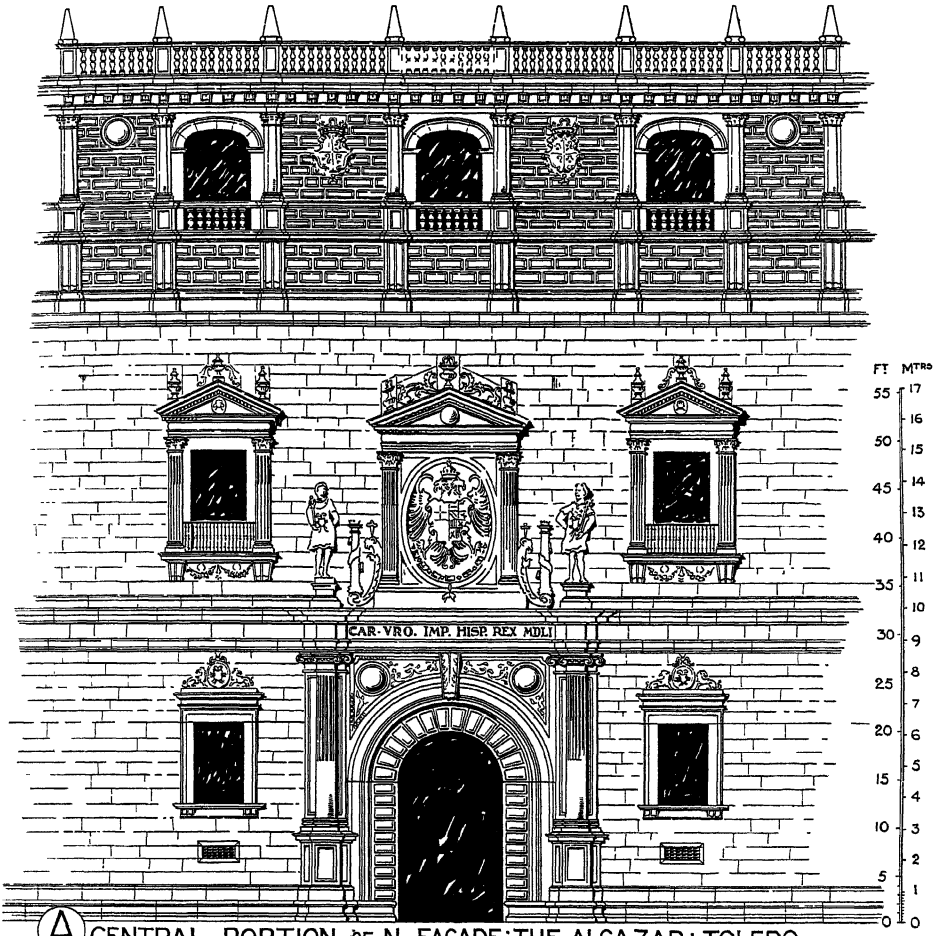
The **Casa de Miranda, Burgos** (A.D. 1543) (p. 680 A), has a noted two-storeyed "patio," with bracket capitals to the columns, so usual in Spain, suggestive of a timber origin. Once a typical old Castilian mansion, with an imposing doorway, it is now used as a factory.

The **Casa de la Conchas, Salamanca** (A.D. 1514) (p. 675 A), takes its name from the curious treatment of its façade, which is entirely covered with carved scallop shells. The small lower windows are guarded with grilles of elaborate Moorish ironwork, while the upper windows, also few in number, are enriched with heraldic carvings.

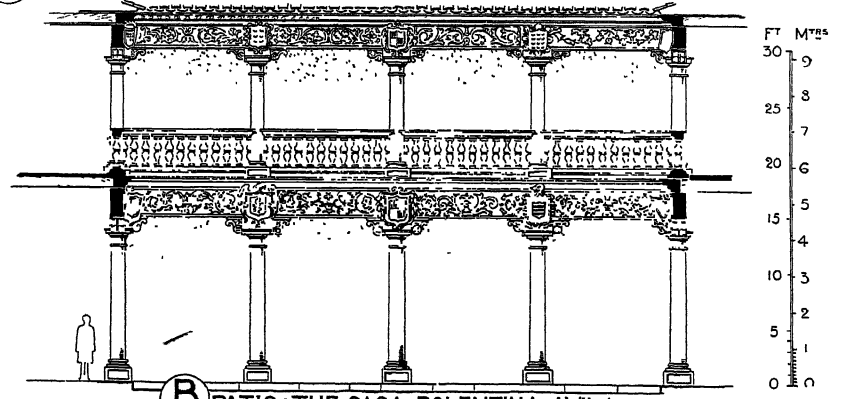
The **Casa de Ayuntamiento, Seville** (A.D. 1526–64) (p. 676), from the design of Diego de Riano, is one of the most charming examples of Plateresque architecture (p. 677), which is seen at its best in the south-east portion, but the other façades of later date still remain incomplete.

The **Alcazar, Toledo** (p. 679 A), an ancient castle of mixed Moorish and Gothic character and built entirely of granite, has a north façade (A.D. 1548), added in the Plateresque style for Charles V, when he converted the Alcazar into a Royal Palace, while the fine central "patio" has arcades of superimposed Corinthian columns. The façade forms a new front to the old castle, and, owing to the hard granite, is not richly sculptured. The central entrance is flanked by Ionic columns surmounted by statues, and the elaborate overdoor has a panel carved with the arms of Charles V. The first-storey windows, with iron balconies, are set off by plain walling, while the top storey has an unusual rusticated treatment, with a small Order on pedestals, surmounted by a flat balustraded roof. The monumental southern portion by Juan de Herrera contains a grand staircase enclosed under a barrel vault, leading up, in two branches, to a two-storeyed palace chapel, and upper arcade.

The **Palace of Charles V, Granada** (A.D. 1527) (p. 680 B, C), adjoining the "Alhambra" (p. 844), was commenced by Pedro Machuca, and forms



A CENTRAL PORTION OF N. FACADE: THE ALCAZAR: TOLEDO.



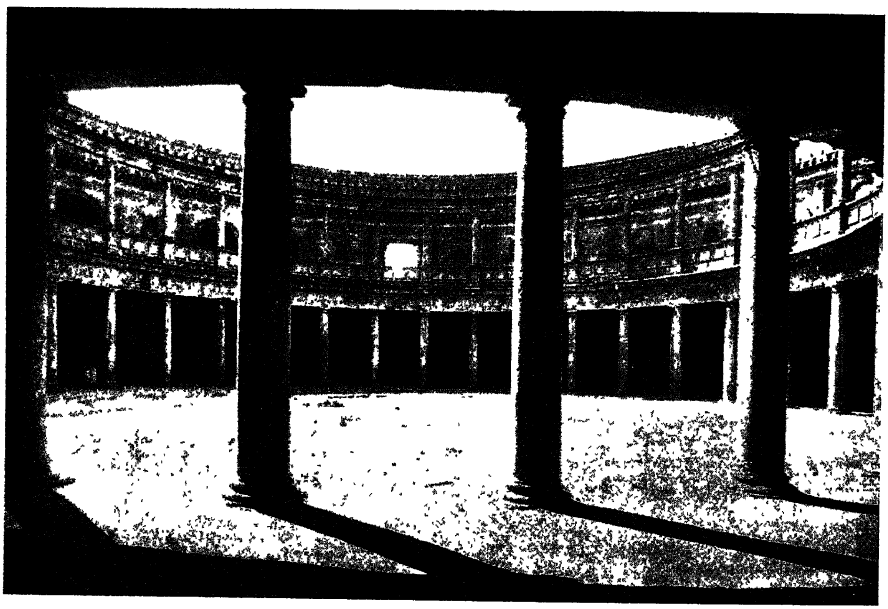
B PATIO: THE CASA POLENTINA: AVILA



A. Casa de Miranda, Burgos



B. Palace of Charles V, Granada

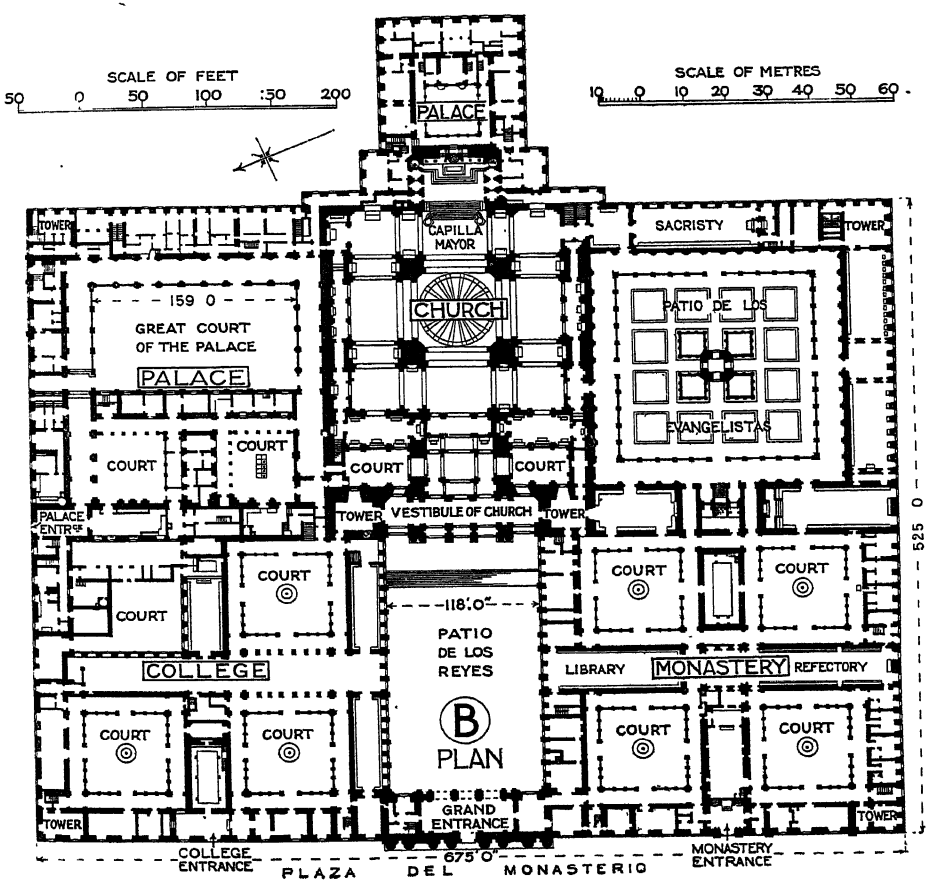


C. Palace of Charles V, Granada: Central Court

THE ESCURIAL: Nr MADRID

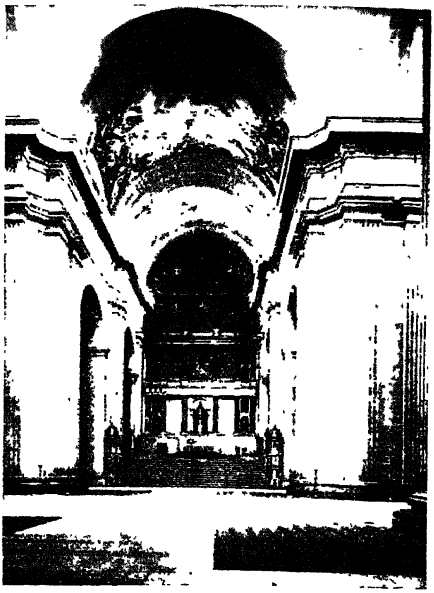


A VIEW FROM N.



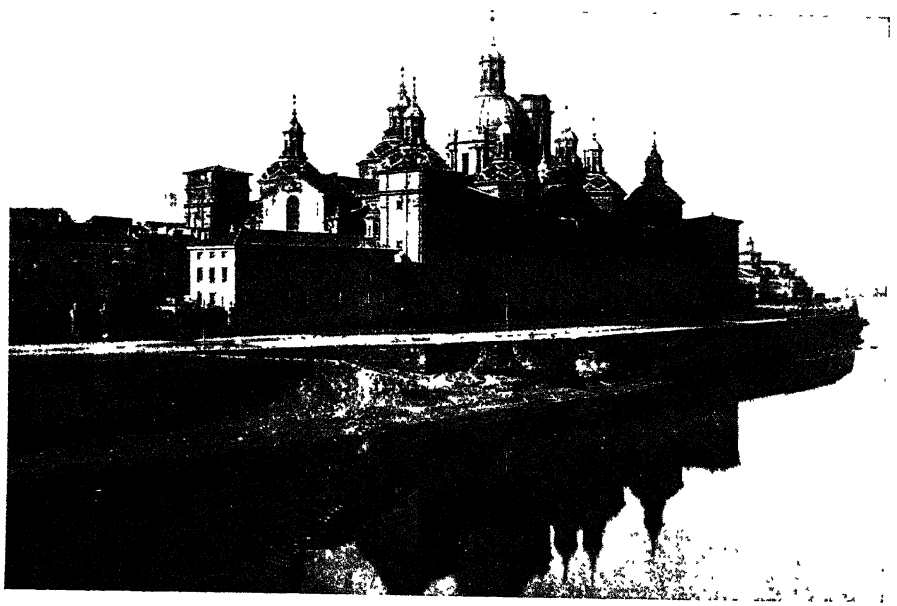


A. Façade of Church



B. Nave looking E.

The Escurial, near Madrid



C. Notre Dame del Pilar, Saragossa

one of the finest examples of the Renaissance in Spain. It is a square mass of building about 200 ft. each way, enclosing an open circular court 100 ft. in diameter. The external façades are two storeys in height, the lower of which has rusticated Doric columns and the upper has Ionic columns (p. 680 B). In both storeys there are " œil-de-bœuf " windows above the main openings, to light mezzanine floors. It is built in golden-coloured stone, while the centres of the external façades, designed in the manner of a Roman triumphal arch, with central and side entrances, are decorated with coloured marble and with sculpture by Berruguete. The circular " patio " (p. 680 C), 100 ft. in diameter, also has superimposed Doric and Ionic colonnades, and forms the chief feature of this monumental building, which, however, was never completed for occupation.

The **Escurial** (A.D. 1559–84) (pp. 681, 682), about thirty miles from Madrid, was commenced by Juan de Bautista for Philip II, but in A.D. 1567 Herrera was appointed architect. This austere group of buildings on a lonely site, 675 ft. by 685 ft., consists of monastery, college, church, and palace with state apartments (p. 681 B). The grand entrance in the centre of the west façade opens into the " Patio de los Reyes," which, lying between the great courts of the monastery and the college, forms the atrium of the church, the latter measuring 330 ft. by 210 ft. To the right of the atrium is the monastery, with its four courts, each 60 ft. square, surrounded with arcades in three storeys, beyond which is the Patio de los Evangelistas. To the left of the atrium is the college, with its four courts, and beyond this the great court of the palace is connected with the state apartments, which project behind the church and make the plan into the form of a gridiron. The church is similar in type to the Carignano Church, Genoa, and shows the influence of Italian art on the work of Herrera, but the Spanish character is seen in the position of the choir over a vaulted vestibule at the west end, which shortens the long arm of the Latin cross, so that the main building is a Greek cross on plan. The simple church façade (p. 682 A) has noble Doric columns, surmounted by granite figures of the Kings of Judah, and the windows between the statues light the raised choir within. The interior (p. 682 B) is cold, but impressive by reason of its simplicity, and the granite walls are in strong contrast to the frescoed vaults, while the magnificent reredos, with its quiet blending of colour, further emphasises the general subdued effect. This world-famous pile owes much of its character to the yellowish-grey granite in which it is built, both within and without, a material which imposed restraint upon the architect, and may indeed have accorded with the ascetic taste of Philip II. The external façades, five storeys high (p. 681 A), are in great blocks of granite, of such a size that the door architraves are in one stone, 10 ft. high, and there is no attempt at window grouping, such as in the Alcazar façade (p. 679 A), and openings generally are devoid of ornament. The external effect of the Escurial is remarkably dignified, with its plain façades and angle towers—representing the feet of the gridiron of S. Lawrence—the whole group culminating in the great western towers of the church and its central dome, 312 ft. in height. The impressiveness of this group of buildings, grand in its severity, is enhanced by its lonely and desolate environment and its mountain background (p. 681 A).

The **Casa Polentina, Avila** (A.D. 1550) (p. 679 B), has a fine " patio " (reminiscent of a Roman atrium), in which the columns have bracket capitals to support the architrave.

The **Casa de los Guzmanes, Leon** (A.D. 1560) (p. 675 B), is a characteristic building, with columned doorway and balcony flanked by statues, small windows protected by iron grilles, and continuous arcaded upper storey in the deep shadow of wide-spreading eaves.

The **Casa Lonja, Seville** (A.D. 1583–98), from designs by Herrera, has a handsome " patio " with arcades of the Doric and Ionic Orders.

The palaces at **La Granja** (A.D. 1721) and **Aranjuez** (A.D. 1727), near Madrid, are interesting examples of the later Renaissance, framed by formal gardens and approached through wide tree-planted avenues.

ECCLESIASTICAL ARCHITECTURE

S. Estéban, Salamanca (A.D. 1524–1610), is a church in the rich Plateresque style (p. 677), but much influenced by both Gothic and Moorish art. The high western arch of the façade, with superimposed pilasters, half-columns, and baluster shafts, encloses sculptured figures of saints in high canopied niches carried right across the elaborate façade, which is further enriched with heraldic shields and finished off with a truncated pediment. This forms a notable example of the bewildering complexity of Spanish architectural ornament.

Burgos Cathedral (pp. 523, 524) is conspicuous externally by its magnificent central tower, added in A.D. 1567. The four massive circular piers, built after the collapse of the previous Gothic piers in A.D. 1539, support pointed arches, elaborate squinches, and high octagonal tower. This tower has quasi-Gothic windows in two storeys, horizontal galleries, and lofty angle pinnacles adorned with statues, and through it all there lingers the old Gothic tradition.

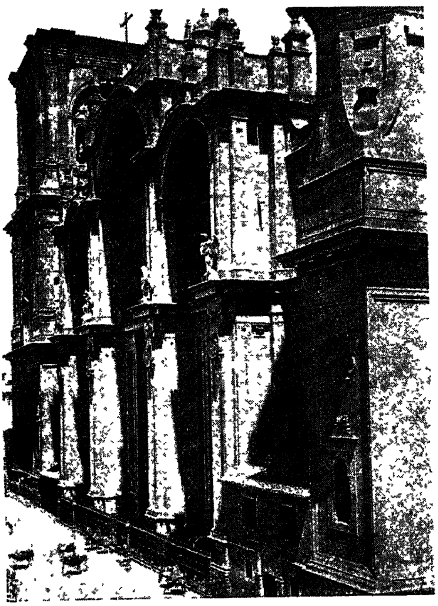
Granada Cathedral (A.D. 1529) (p. 685 A, B), by Diego de Siloe, is one of the grandest Renaissance churches in southern Spain, and forms a memorial of the conquests of Ferdinand and Isabella over the Moors. The interior (p. 685 B) is a translation of Seville Cathedral into the Renaissance style, and the great piers of the nave are faced with the Classic Orders, while the radiating piers, supporting the dome of the circular " Capilla Mayor," show an ingenious and novel treatment. The late Gothic " Capilla Real," entered through a magnificent wrought-iron " reja," contains the famous Renaissance tombs of Ferdinand and Isabella and other kings and queens of Spain. The unfinished western façade is unusually imposing in design, with a north tower and tall, massive piers to the cavernous arches, which front the nave and aisles (p. 685 A).

Jaen Cathedral (A.D. 1532) (p. 685 C) and **Malaga Cathedral** (A.D. 1538), with its fine steeple, are other churches of the early Renaissance period.

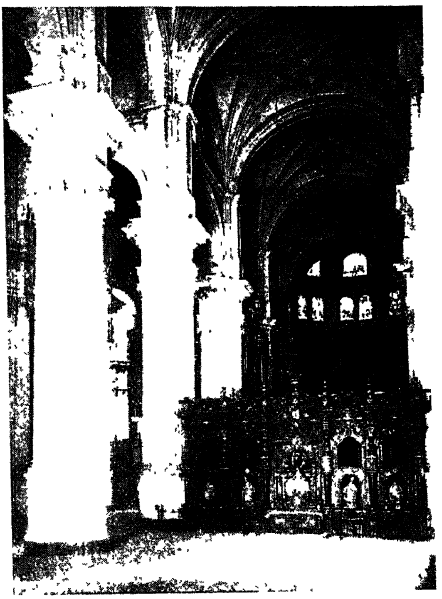
Valladolid Cathedral (A.D. 1585) (p. 685 D), by Juan de Herrera, the Spanish Palladio, has the rectangular plan, 400 ft. by 200 ft., so typical of the later period, and contains some fine carved choir stalls. The imposing exterior, like so many other architectural projects in Spain, was never completed ; its intended appearance can be seen in Herrera's model preserved in the muniment room of the Cathedral.

Notre Dame del Pilar, Saragossa (A.D. 1677–81) (p. 682 C), is, like Valladolid, rectangular in plan, with a fine enclosed western " coro." The exterior, as seen across the River Ebro, forms an imposing pile of many domes, but only one of the four proposed angle towers was built.

S. Francesco el Grande, Madrid (A.D. 1761–84), built on the model of the Pantheon, Rome, to contain the tombs of famous Spaniards, has a two-storeyed portico and lateral towers, but is devoid of interest.



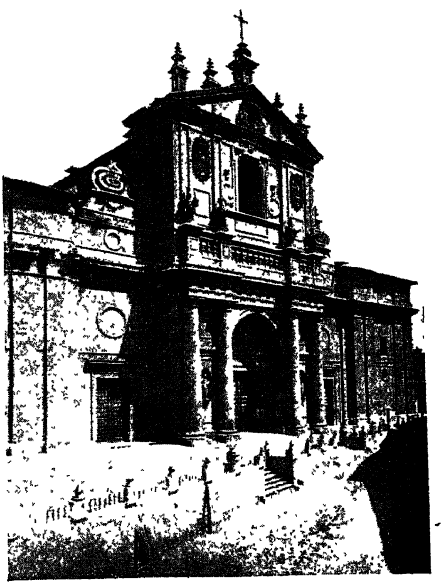
A. GRANADA CATHEDRAL: EXTERIOR



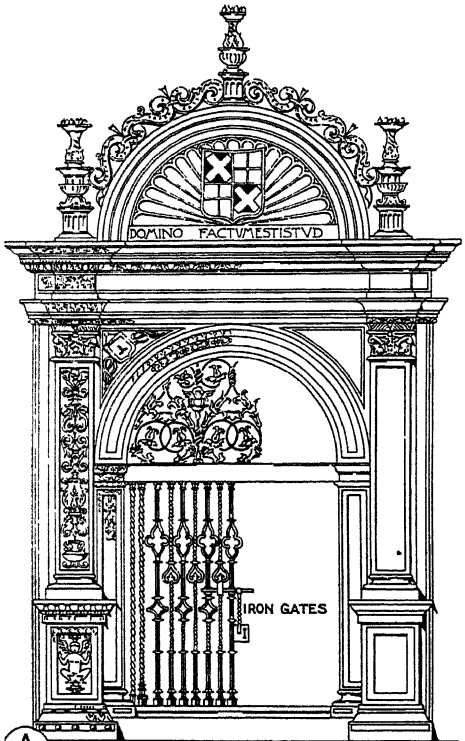
B. GRANADA CATHEDRAL: INTERIOR



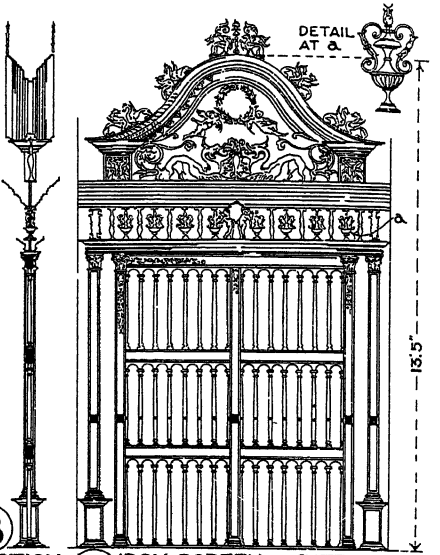
C. JAEN CATHEDRAL



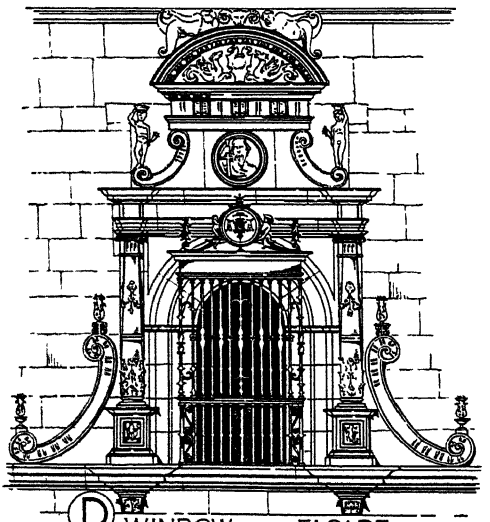
D. VALLADOLID CATHEDRAL



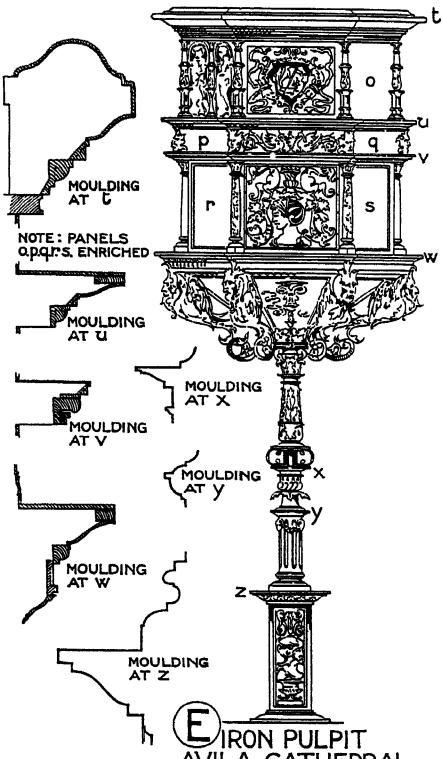
A DOOR FROM CLOISTERS: SIGUENZA CATH.



B SECTION C IRON SCREEN OR GATE TO SIDE CHAPEL: CUENCA CATHEDRAL



D WINDOW FROM FACADE UNIVERSITY: ALCALA DE HENARES



E IRON PULPIT AVILA CATHEDRAL.

4. COMPARATIVE ANALYSIS

(A comparative analysis of essential differences between Gothic and Renaissance architecture is given on p. 547.)

A. **Plans.**—In churches, wide naves are usual, and a general largeness of scale is prevalent in the later rectangular churches, which are sometimes without aisles. A " cimborio " (lantern or dome) is common at the crossing (p. 681 B) ; transepts and apsidal chancels are usually shallow, and the ritual choir remains west of the transepts, as in many Spanish churches of the Gothic period. The " patio " (pp. 679 B, 680 A), or Spanish version of the Roman atrium and Italian cortile, is universal in houses, and is given even greater seclusion, doubtless due to Moorish influence ; thus in Toledo only occasional glimpses of the " patio " can be obtained through doorways in jealously enclosing walls. Staircases, like that in the transepts of Burgos Cathedral, are often on a grand scale. The spacious " patio " and broad staircase in the Casa Infanta, Saragossa, and the Alcazar, Toledo, make as picturesque and fanciful a group as any in Spain.

B. **Walls.**—Walls were usually of stone ; granite was employed for the Escurial and in Madrid, while brickwork bonded with stone was used in the Moorish districts of Saragossa and Toledo. The arabesque parapets, as in the Palacio de Monterey, Salamanca, and the projecting timber cornices of the Saragossa palaces are both equally characteristic. The typical walls are plain below, with few openings, except the elaborate doorways, probably due to Moorish precedent, while the upper windows are accentuated by a wealth of ornament. The top storey is frequently designed as a continuous arcade (p. 675 B), which with its deep shadow gives an impressive finish to the building. This served as an evening resort, much as did the flat parapeted roofs of the East. The internal walls of the great saloons of the early palaces are of plain stonework, ten or more feet in height, hung with tapestry. The steeples attached to the Cathedrals of Santiago, Granada (p. 685 A), Jaen (p. 685 C), Malaga, Saragossa, and Carmona, are some of the many varieties of this feature to be found throughout Spain.

C. **Openings.**—Arcades were treated with lavish decoration, especially in the " patios," as at Avila (p. 679 B) and at Burgos (p. 680 A), where they give special character to this central space. Doorways were important features, and, following Moorish tradition, were designed on a grand scale, as at Toledo and elsewhere (pp. 675, 676, 679 A, 686 A), probably due to the prominence given to gateways in Oriental countries. Windows are framed in richly carved stonework, and are flanked by small columns on corbels, and finished by a highly ornamental head (p. 686 D). Ground-floor windows are frequently protected by those beautiful iron grilles for which Spanish craftsmen are renowned (p. 675).

D. **Roofs.**—As in all hot countries, roofs with wide-spreading eaves are flat or of low pitch, and gables are rare (p. 675). Domes, both circular and octagonal, were used for churches (p. 682 C), and towers are frequently topped with domes or spires of fanciful design, such as the angle towers of the Escurial (p. 681). The large saloons in palaces sometimes have an internal upper gallery round the walls, carried on a projecting timber cornice of fanciful design, and suggestive of Moorish influence, as in the Audiencia, Valencia.

E. **Columns.**—Columns derived from the Roman " Orders " were of varied types, with elaborate shafts, especially in the Plateresque style (pp. 676, 679). They were often either twisted or of baluster shape, frequently with wide-

stretching bracket capitals, which acted as corbels to support the architrave, and were suggestive of forms used in timber work (pp. 94 C, 680 A). Later, owing to the influence of Herrera, columns of Classical correctness prevailed (pp. 680 B, C, 682 A, B, 685 B), until replaced by the fanciful forms of the Baroque style.

F. **Mouldings.**—Throughout the earlier period mouldings reflect the Gothic tradition; they are small and refined, owing to the influence of the silversmiths' craft, and Moorish plasterwork, with its fineness of detail, seems to have served as a model for mouldings. Great richness was often produced by bringing the mouldings forward over the capitals, and this fluttering effect of many mitres gives great liveliness (p. 686).

G. **Ornament** (p. 686).—Ornament derives its special character from the mingling of Gothic, Moorish, and Renaissance elements in elaborate craftsmanship. "Retablos" in alabaster, wood, or stone, peopled with life-size figures in architectural frames, are without doubt the finest decorative adjuncts to church interiors, where they often fill the width of the choir and rise to a great height, as at Burgos and elsewhere (pp. 524 D, 682 B, 685 B). The tombs of Spanish grandees, rich with heraldic devices and portrait busts, offered opportunities for the display of the national love of ostentation (p. 689). Choir stalls are ornate, with carved misericords, baluster-shafts, elbow-rests, and canopies, as at S. Marcos, Leon, and Valladolid. The wrought-iron "rejas" of churches (p. 686 B) and grilles of palace windows (pp. 675, 686 D) are among the most beautiful productions of Spanish craftsmanship, and everywhere show the influence of architectural forms, such as those in Seville Cathedral. The iron pulpit in Avila Cathedral in the Plateresque style, dating from A.D. 1525, of which the upper portion is wood plated with iron and gilded, is an instance of the importance attained by the metal-workers' craft, which also produced the elaborate armour of the period (p. 686 E). Sculpture varied much in quality, and was sometimes coarse in execution, but the work of Berruguete, the Spanish Donatello, is refined, though it often fails to become an integral part of the building (pp. 682 A, 685 A). Stained glass, influenced by Flemish work, was often heavy in colour, but the tile-work of southern Spain has the charm of its Moorish origin. Spanish churches are veritable museums for treasures of art, which have not, as often in other countries, been removed to public museums. Reliquaries, monstrances, bishops' crooks, candelabra, altar busts, and book-covers provided an opportunity for the worker in metal to exercise that meticulous treatment which even extended to architectural design so much as to have suggested the transference of the appellation of Plateresque from the ornament to the architecture.

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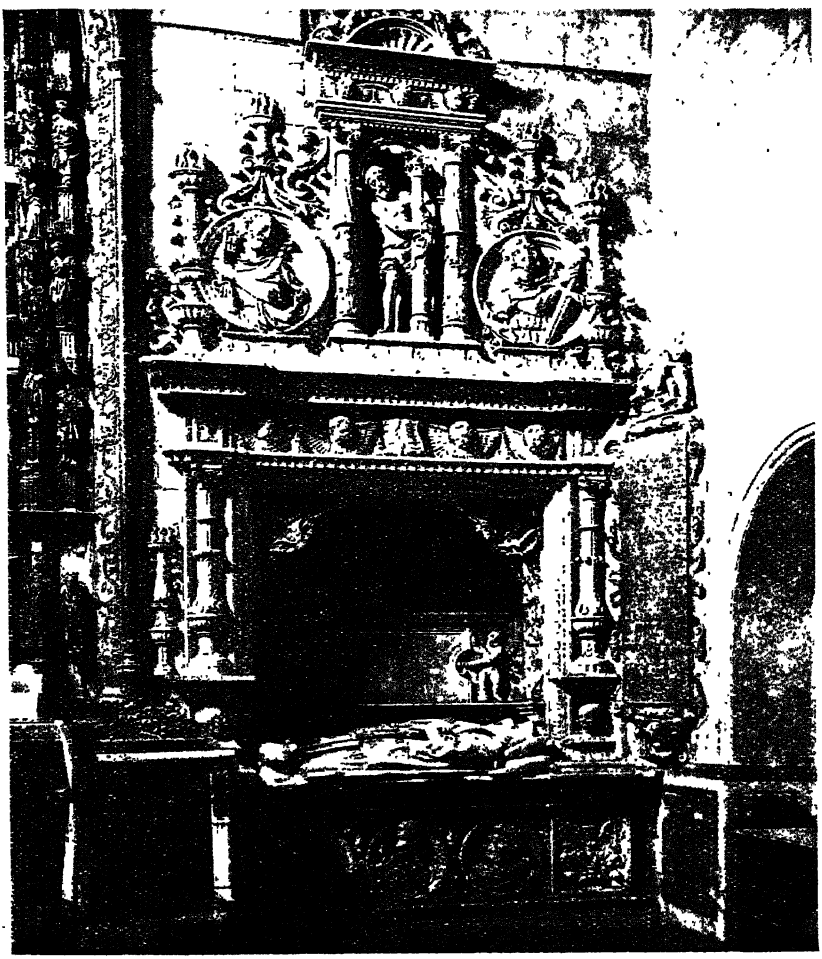
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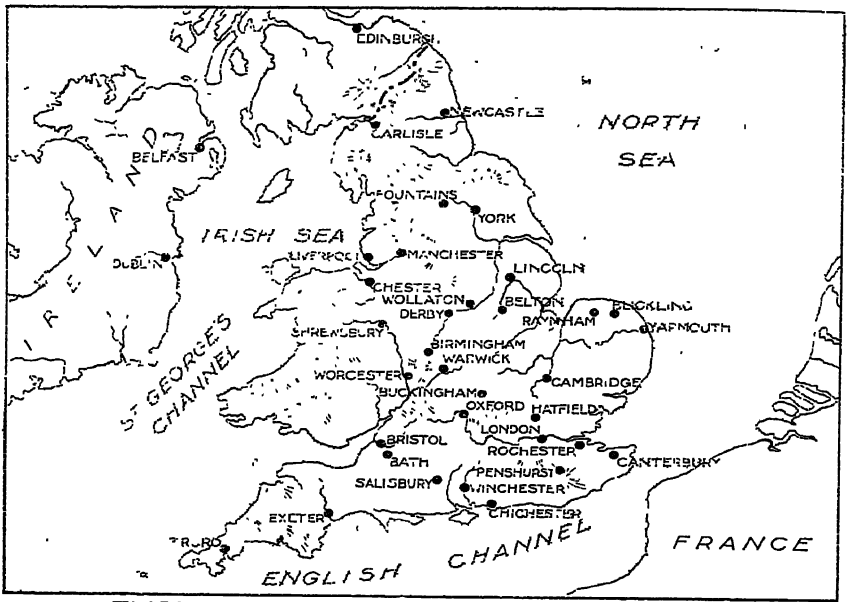
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RENAISSANCE TOMB IN S. GIL, BURGOS



ENGLAND IN THE RENAISSANCE PERIOD

ENGLISH RENAISSANCE

(See p. 311 for English Mediæval Architecture. A general introduction to Renaissance Architecture in Europe is given (p. 540).)

1. INFLUENCES

i. Geographical.—The island influence still continued, as in previous periods (p. 311), to produce those pronounced modifications which stamp all English architecture with an essentially national character. There is therefore no need for further reference to geographical influences, except in so far as their operation was affected, altered or arrested, by other considerations, such as the varying relations of England with Continental powers. Moreover, owing to the distance from Italy, the birthplace of Renaissance, England was the last country to fall under the influence of the new movement which naturally reached this island by way of France and the Netherlands. The friendly relations which, at different times, marked our intercourse with these countries may be seen faithfully reflected in English architecture. The great wars, however, at the end of the eighteenth and beginning of the nineteenth century closed Continental travel to Englishmen, and it is a curious coincidence that this period marks the least attractive phase of English architecture. Throughout the nineteenth century a rapid shrinkage of distance was brought about by railways and steamships, while electricity, photography, and other processes of reproduction also contributed in some measure to the gradual reduction of geographical influence.

ii. **Geological.**—This influence has been considered in the Mediæval period (p. 312), and, as one of the natural influences, it is continuous, and still gives a special character to the architecture of various districts; though other elements have modified its operation. Timber, for instance, gradually fell into disuse for building purposes, partly on account of its liability to fire, and also because it was no longer so easy to obtain, as the growth of towns and the cultivation of land for the needs of an increasing population had involved the clearing of forests; but timber was still used in the Elizabethan period, in Lancashire, Cheshire, Shropshire, and other timber-growing counties. Terra-cotta, introduced in the Tudor period, was not much used even for architectural details until recent times. Inigo Jones first made use of Portland stone in his London buildings, and it produces very similar effects, after exposure to the weather, as the stone of Venetian palaces. Sir Christopher Wren also adopted it for his many churches and secular buildings after the Great Fire of London, and it has been largely used up to the present day. Bath stone of the soft oolitic formation, which crosses England diagonally from Somerset to Lincoln, gives a charming character to the manor houses of these districts, just as the hard Yorkshire gritstone, which did not lend itself to carving, caused the adoption there of a plain and unornamented style. The geological map (p. 311) gives a rough indication of the building materials available in different districts. Dutch fashions under William III gave an impetus to the use of red brick with all its warmth of colour, which is so welcome a note in our grey climate, and the manner of its use is perpetuated in the technical term "Flemish bond."

iii. **Climatic.**—The influence of climate was operative in the Renaissance as in former periods (p. 312). When the new style was introduced from Italy, the dull English climate at once began to adapt it to our northern use. In order to admit abundant light, large windows still continued, especially in the early period, in striking contrast to those of Italy. A growing desire for comfort, coinciding also with the more general use of coal as fuel in the reign of Charles I, brought about the introduction of a fireplace in each room; while chimneys continued, as in the Tudor period, to be prominent symmetrical features of the external design, instead of being disguised as in Italy.

iv. **Religious.**—Early in the sixteenth century religious controversy was astir in the land, and the Reformation in religion coincided in England with the commencement of Renaissance in architecture. Abuses had crept into the Church, and the Popes had failed to deal with them. The constant irritation which had existed between kings of England and popes of Rome had already been accentuated in England by the attitude taken up by Henry VIII, and the relation of the English Church to the Crown was finally settled by the Act of Supremacy (A.D. 1559) in the reign of Elizabeth. When the monasteries, large and small, had been suppressed (A.D. 1536–40), much of their property was distributed among the courtiers of Henry VIII. Monasteries either fell into ruin or, in a way characteristically English, emerged as national cathedrals; while others again were cleared away for the erection of country houses, or were even incorporated in the mansions of the new nobility. During this period men's minds were turned rather to Church reform than to church building. Moreover, the great church-building era of the Middle Ages had left an ample supply of churches, and not until the latter part of the seventeenth century was there a renewal of church building. In London especially, the Great Fire gave Sir Christopher Wren an opportunity of exercising his genius in the new style which, from an ecclesias-

tical point of view, was specially suitable for the preaching which formed so important a part in the Protestant service.

v. Social.—At the time when the Renaissance came to England, not only had new social conditions been created, but national life was rich in every variety of social, artistic, and literary movement. The Renaissance, with its recognition of the inherent human right to the enjoyment of life, appealed strongly to a community which had thrown off ecclesiastical domination and was rapidly developing a free national and domestic life along secular lines. The Wars of the Roses (A.D. 1455–85) had already decimated the old nobility, but expanding commerce was constantly supplying a new class of wealthy merchants and traders to take the place of the former feudal lords. The new men who, as we have seen, had acquired land—often from monastic establishments—now required houses suitable to their wealth and to the standing in the country which their enterprise and success in trade had conferred upon them. These then were the men who were ready to adopt the new style which, in its grandness of scale, exactly suited their ideas. Of this period it may also be said that " knowledge spread from more to more " ; for Caxton, with his printing press at Westminster (A.D. 1477), had brought the hoarded knowledge of the privileged few within the reach of common humanity. The printed and picture book also served to make artists and craftsmen familiar with the plans and details of Classic buildings. An Englishman, John Shute, published the " First and Chief Groundes of Architecture " in A.D. 1563 ; while the great work of Vitruvius, the ancient Roman architect, was also translated and circulated.

Foreign artists, imbued with Renaissance ideas, had already flocked to the Court of Henry VIII, and to these were added, in the reign of Elizabeth, Flemish and German craftsmen, who settled in the eastern counties, and there influenced the style of the new mansions. Finally, the Massacre of S. Bartholomew (A.D. 1572) drove to England many skilled Huguenot craftsmen who contributed to the efficient execution of the new style in their new home. The changed social conditions, together with practical considerations resulting from new methods of warfare and the increasing use of gunpowder, had rendered the fortification of dwelling-houses useless. Thus the ancient castle had given way to the Tudor manor house, which in its turn was developed into the stately mansion of the Elizabethan and Jacobean periods. We have already seen the result of the suppression of the monasteries in the foundation of national cathedrals and in the erection of country houses ; and yet another phase of national and local life, affected by the dissolution of monastic establishments, is seen in the growth of educational and philanthropic endowments. Both Henry VIII and Edward VI had devoted part of the monastic treasuries to the foundations of colleges and grammar schools, and thus some of the monastic funds continued in use for one of their original purposes, but no longer under the special control of the Church. The progressive development in domestic comfort and the increase in hospitality during the reign of Elizabeth (A.D. 1558–1603) was responsible for an era remarkable for the erection of those great and commodious mansions which are still the special pride of England ; nor must we forget that many important building schemes had previously been initiated, amongst which were those of the ambitious Protector Somerset, which were cut short by his execution in A.D. 1552.

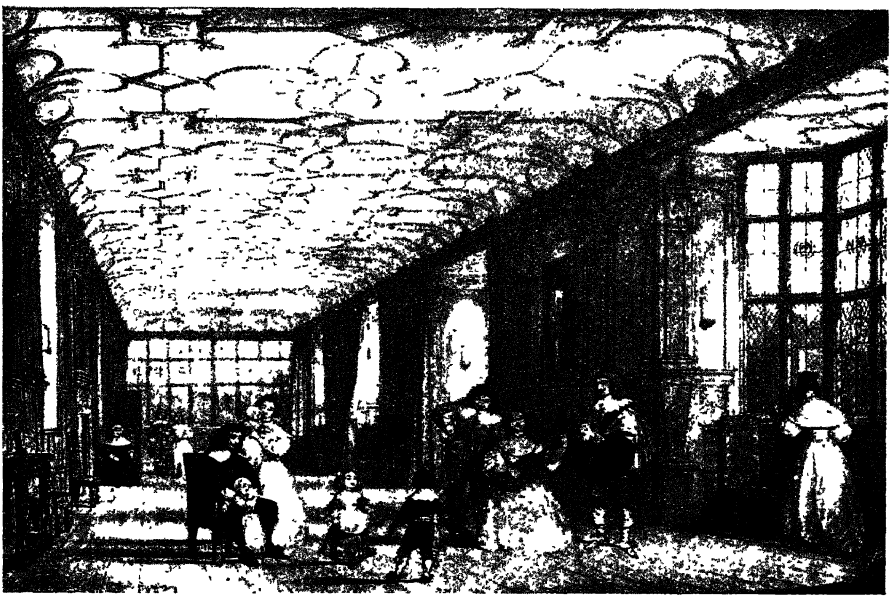
During the spacious days of Queen Elizabeth literature bore no small



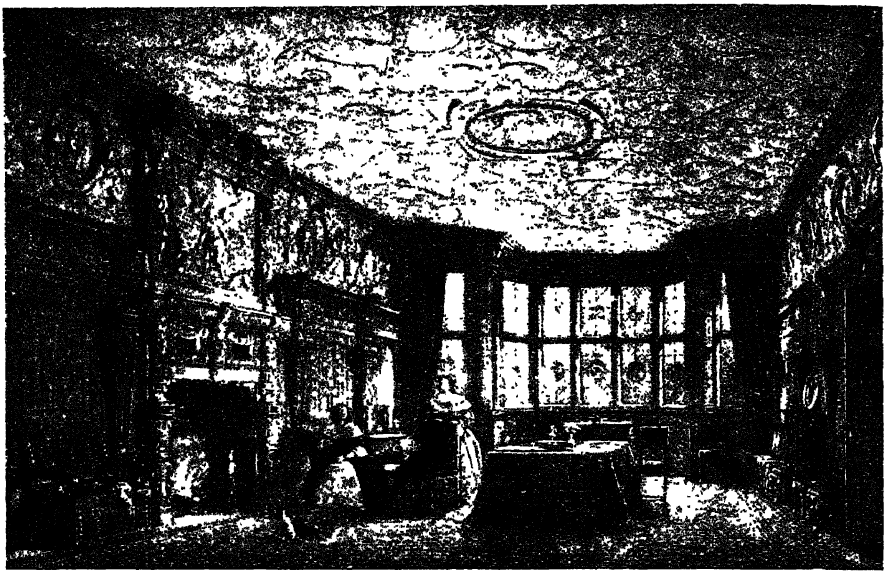
A. HATFIELD HOUSE, HERTS : HALL



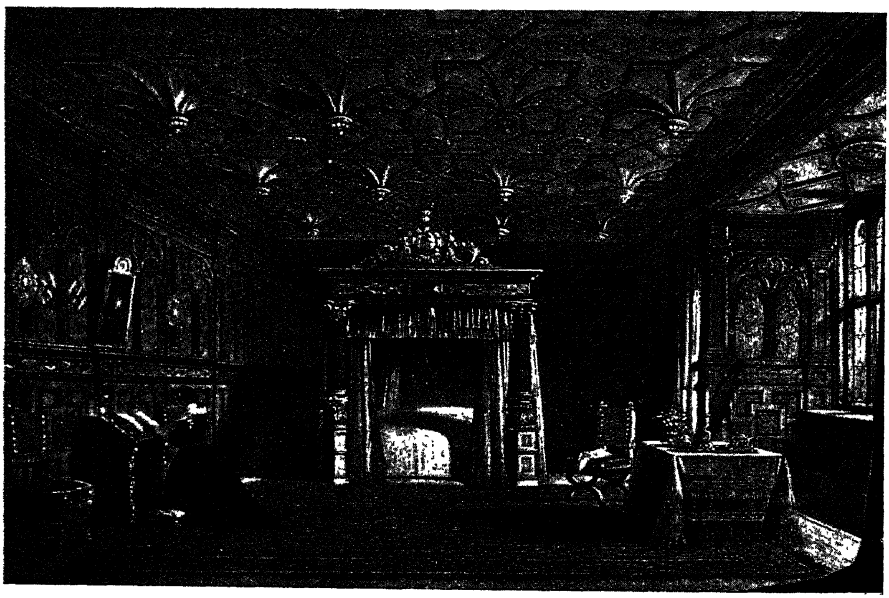
B. KNOLE HOUSE, KENT : STAIRCASE



C. HADDON HALL, DERBYSHIRE : LONG GALLERY



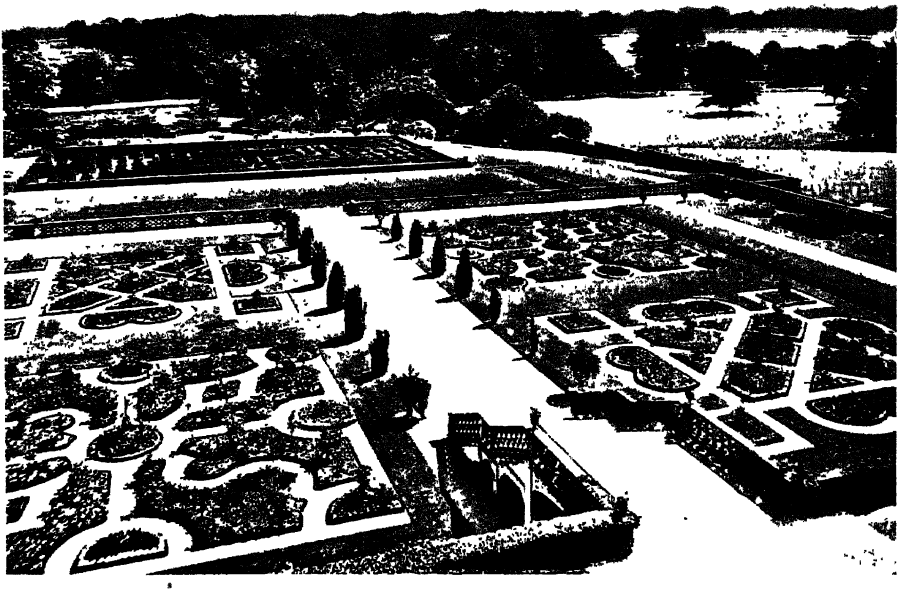
A. Crewe Hall, Cheshire : Drawing Room



B. Sizergh Castle, Westmoreland : Bedroom

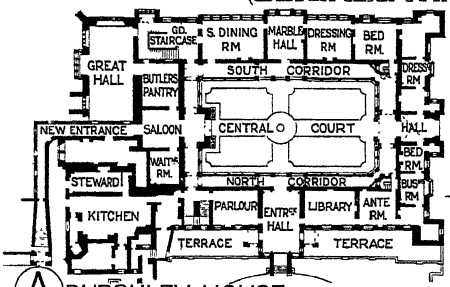


A LONGFORD CASTLE, WILTS. FORMAL GARDEN

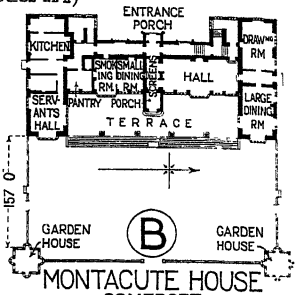


B. HATFIELD HOUSE, HERTS: FORMAL GARDEN AND MAZE

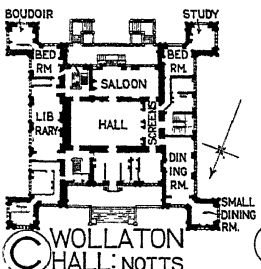
EARLY RENAISSANCE PLANS
(ELIZABETHAN & JACOBEAN)



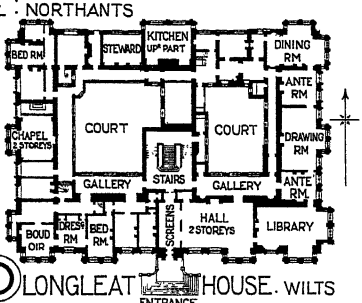
A BURGHLEY HOUSE : NORTHANTS



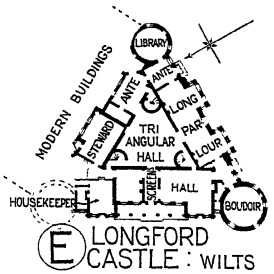
MONTACUTE HOUSE SOMERSET



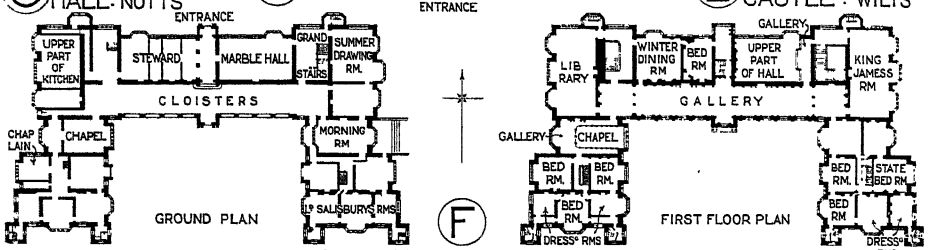
C WOLLATON HALL : NOTTS



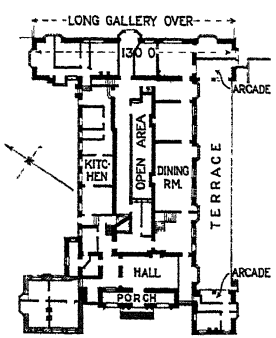
D LONGLEAT HOUSE. WILTS



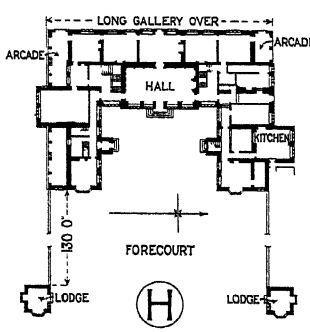
E LONGFORD CASTLE : WILTS



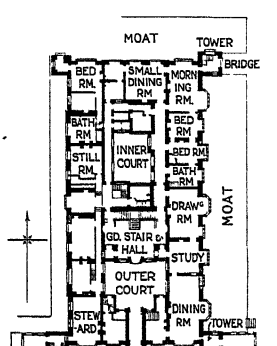
HATFIELD HOUSE : HERTS.



G BRAMSHILL : HANTS



ASTON HALL . WARWICKSHIRE



BLICKLING HALL : NORFOLK

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part in influencing national architecture; for the writings of such literary giants as Spenser, Shakespeare, Bacon, and Sir Philip Sidney, with their constant reference to the themes and traditions of ancient Rome, could not fail to give a Classic tone to the buildings erected by men who were artists in stone as the others were artists in words. In all these combined and simultaneous activities we see a new national art in the making, under the influence of Italian and French Renaissance. During the reigns of James I and his son, English colonising enterprise, which then surpassed that of any other country, led to the expansion of English trade, with a consequent further accession of numbers to the wealthy classes who, following the king's example, lived much in the country and there erected many stately houses. Though Charles I was a patron of art, the disturbed condition of the country during his ill-starred reign, culminating in the Civil War, arrested the progress of architecture, as exemplified in the abandonment of the great scheme for the projected Palace of Whitehall (p. 715). During the Stuart period the English Colonies of North America and the West Indies exceeded all others in importance, and together with Indian and African trade established English overseas prestige. This growing trade also gave increased consideration to all questions of home commerce and a consequent greater importance to the trading classes.

The Bank of England was established in A.D. 1694; the economic situation underwent a marked change, and the "mercantile system" was concerned in securing a surplus of exports over imports, which naturally resulted in an increase of home manufactures. These conditions also created a further demand for houses for wool staplers and weavers, who challenged the supremacy of those in France and Holland. Agricultural industry was in a more thriving condition, and pauperism consequently decreased; while the Settlement Laws of the period helped to equalise the poor relief of different districts and to arrest vagrancy. There was a greater sense of security of living, which created better conditions for general architectural enterprise. It is difficult to realise that as late as the end of the eighteenth century there were still only some five million inhabitants in England and Wales; while London, with its half-million, far exceeded any other town in size, and correspondingly influenced public opinion and national policy. Norwich, with its weaving and banking community, and Bristol with its West India trade and sugar refining, were next in importance to the capital. The increase of population in London did not, however, induce the City to extend its boundaries, and thus a new town grew up to the westward, which gave a further opportunity to Renaissance architects, in addition to that which had been afforded by the Great Fire in the City in A.D. 1666. The general increase in wealth, the rise in the standard of comfort, and the improved social conditions, small as they appear measured by the standard of to-day, are all seen in the large number of plain yet comfortable houses which line the streets of many country towns and belong to the Georgian period of architecture.

In the nineteenth century further changes in social conditions are reflected in a breaking away from tradition in architecture, and many minds turned restlessly for inspiration to past styles, which they applied to the new buildings required for the various needs of an increasing population. Nineteenth-century developments are referred to later (p. 763).

vi. Historical.—Henry VIII had been firmly established on the English throne, and the security of his position at home enabled him to interest himself in affairs on the Continent, and his famous meeting with Francis I

on the Field of the Cloth of Gold in A.D. 1520, with all its resplendent accessories, resulted in attracting foreign artists to his court, and they largely determined the manner of the adoption of the Renaissance style in England, alike in architecture, sculpture, and painting. Henry VIII was on friendly terms with his brother monarchs, but would brook no interference from Rome with his royal prerogative. He handed on this legacy of political and religious freedom to his son, Edward VI; but the position was temporarily changed during the reign of Mary, who, through her marriage with Philip II, was under Spanish influence, though it did not extend much beyond her own immediate surroundings. A similar foreign influence had been at work in Scotland, and there French architectural features were popularised, as at George Heriot's Hospital, Edinburgh (p. 433), owing to the alliance of Francis and Scotland under James IV (A.D. 1488–1513).

The accession of Elizabeth brought in widely different elements, and the defeat of the Spanish Armada (A.D. 1588) not only marked the decline of Spanish power in Europe, but also further established the independent position of England, and gave an extended scope to her national genius, both in politics and art. The patriotic outburst occasioned by the challenge of Spain and the defeat of her Armada found material expression in the splendid mansion-building of the period; and the dominating note in architecture was domestic, rather than military or ecclesiastical.

The Stuarts brought England into closer touch with the Continent, more especially with France and Italy. James I was not only a disciple of the new learning, but was also a patron of Inigo Jones, the great English architect who studied in Italy and introduced the Palladian Renaissance into England, notably in his design for the Banqueting House, Whitehall (p. 715). Charles I inaugurated a period marked by an amazing intermingling of intrigue, politics, and war, when the King found himself embroiled both with France and Spain. These conditions were depicted in architecture, painting, and the minor crafts, which were fostered by the fine artistic sense of the King, but the Civil War arrested progress in all forms of art. The Commonwealth, with the social upheaval consequent upon a new form of government, together with the reaction represented by Puritanism, overshadowed general historic influences. It was essentially a period when the connection between England and the Continent was marked rather by the power of Cromwell in asserting the position of England than by the operation of foreign influences upon English art. Charles II had lived at the court of Louis XIV, and there imbibed French ideas in art, which were introduced into England at the Restoration and continued in force till the Great Rebellion and the flight of James II (A.D. 1689). William of Orange brought over those Dutch influences which were so long predominant in English domestic architecture. He introduced into his new kingdom those substantial red brick houses, with the formal gardens and water-ways which make up the landscape of Holland, and which form such conspicuous features at his Hampton Court Palace. The later Stuart period had seen the carrying trade of the world transferred from Holland to England, while English victories over the French, followed by the Peace of Utrecht (A.D. 1713), secured to England the chief trade of Europe and made her rich enough to build up a navy which gave her supremacy at sea, both over France and Holland. England still depended largely on the manufactured products of those countries, but Huguenot weavers from France helped our workmen in the towns to develop their industries, and engineers from Holland taught our agriculturists to convert swampy fen-

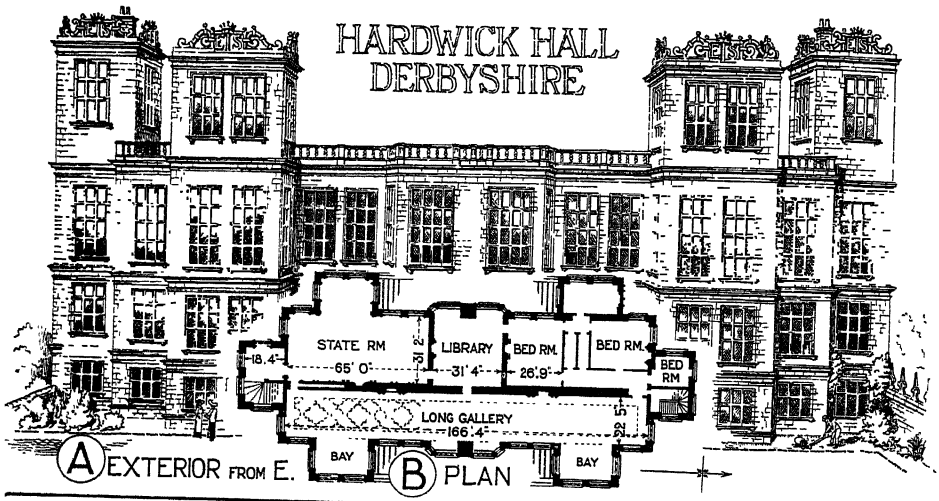


A. Little Moreton Hall, Cheshire : Courtyard



B. Kirby Hall, Northants Courtyard

HARDWICK HALL DERBYSHIRE

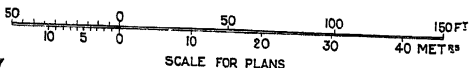


(A) EXTERIOR FROM E. (B) PLAN

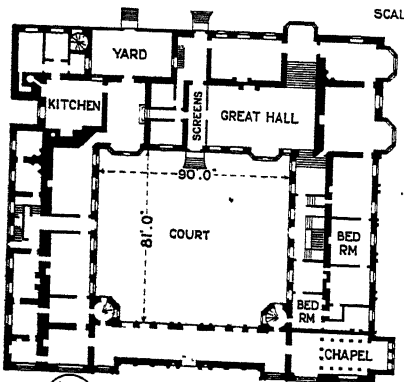
CASTLE ASHBY : NORTHANTS



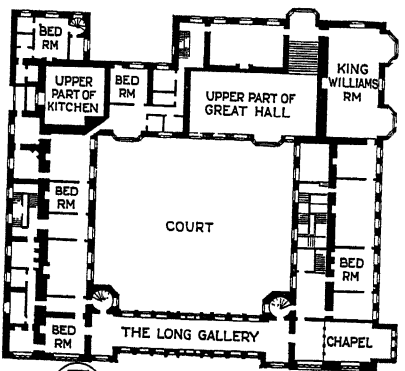
(C) EXTERIOR FROM S.



SCALE FOR PLANS



(D) GROUND FLOOR PLAN



(E) FIRST FLOOR PLAN

lands into corn-growing country. Thus there was an increase in general prosperity which naturally produced a still further demand for more and better dwelling-houses.

The reigns of Queen Anne and the four Georges saw Dutch influence on architecture gradually anglicised, and the houses that were now built were of that convenient and comfortable type known as Queen Anne and Georgian, well suited to the needs of the increasing middle classes, both in town and country.

The French Revolution (A.D. 1789) was the outcome in one country of a spirit of revolt general in all countries, which in England led to the breaking up alike of stereotyped social conventions and of continuous tradition in architecture, and this resulted, during the nineteenth century, in that revival of past styles which is the special characteristic of modern architecture (p. 764).

2. ARCHITECTURAL CHARACTER

We have already studied the general architectural character of Renaissance in Europe (p. 542), and traced its gradual adoption in different countries to suit different nationalities. From Italy, where it had its origin about A.D. 1400, the Renaissance movement travelled to the sister Latin country of France; to Germany, which, through the universities, welcomed the new movement; to the Netherlands, and to Spain. Not until a century after its birth in Florence did it make its first appearance in England in the famous Tomb of Henry VII (A.D. 1512–18), and that was only a tentative display of a style which afterwards secured a firm footing, as suitable for the magnificent country mansions and stately town houses of the substantial professional and trading families which were rapidly forming England's new nobility.

English Renaissance architecture may be divided as follows:

Early Renaissance	A. Elizabethan	(A.D. 1558–1603)	(pp. 701, 708)
	B. Jacobean	(A.D. 1603–1625)	(pp. 702, 713)
Late Renaissance	A. Stuart	(A.D. 1625–1702)	(pp. 702, 715)
	B. Georgian	(A.D. 1702–1830)	(pp. 703, 733)

The architectural character of Early and Late Renaissance will now be traced through successive periods, displaying a more or less persistent continuity of style with variety in detail, and the reader is referred to the Comparative Analysis (p. 749) for the characteristic features in each period.

EARLY RENAISSANCE

Elizabethan Architecture.—The reign of Elizabeth (A.D. 1558–1603) witnessed the establishment of the Renaissance style in England. Elizabethan architecture, which followed the Tudor, was a transition style with Gothic features and Renaissance detail, and in this respect it bears the same relation to fully developed English Renaissance as the style of Francis I does to fully developed French Renaissance. The zeal for church building in the Middle Ages in England had provided churches which remained sufficient for popular needs, and thus Elizabethan architecture was secular rather than ecclesiastical in its nature, and was the outcome of the needs of a time when powerful statesmen, successful merchants, and the enriched gentry required mansions suitable to their new position, and they were built in England, as in France, mainly in the country, in contrast to the churches and palaces of the cities in Italy. These great houses throughout the English country-side displayed

many new combinations of features. Externally towers, gables, parapets, balustrades, and chimney-stacks produced an effective skyline, and walls were enlivened by oriel and bay-windows with mullions and transoms (p. 700), while internally the same style applied to fittings, furniture, and decoration, made for repose, dignity, and uniformity (p. 761). Elizabethan mansions were set in a framework of formal gardens in which forecourts, terraces, lakes, fountains, and yew hedges of topiary work combined to make the house and its surroundings one complete and harmonious scheme (p. 695).

Jacobean Architecture.—The architecture of the reign of James I (A.D. 1603–25) inherited Elizabethan traditions; but as Roman literature and models became better known, a subtle change crept in, and the sober regularity of Classic columns and entablatures gradually supplanted the quaint irregularity of Elizabethan architecture, although the main lines of the design were much the same in both periods (p. 705). Buildings still continued to be for domestic rather than for religious use, and thus the style developed along lines suited to popular needs, with considerable latitude in detail and ornament, not only for buildings, but also for fittings and furniture, which now became more abundant in quantity and more decorative in quality, and was supplied both for mansions and churches (p. 761). As in the Elizabethan period, it was in the screens, pulpits, and monuments, which were freely added to Mediæval churches, that Jacobean art found its outlet in ecclesiastical architecture, and much of the human interest of English Gothic churches is due to the historical continuity supplied by these Jacobean monuments (p. 758).

The drawings of John Thorpe and of Huntingdon Smithson, made between A.D. 1570 and 1632, show how these architects designed their buildings.

LATE RENAISSANCE

Stuart Architecture.—The term "Stuart" is used for the architecture of Charles I (A.D. 1625–49), the Commonwealth (A.D. 1649–60), Charles II (A.D. 1660–85), James II (A.D. 1685–89), and William and Mary (A.D. 1689–1702).

In England, as in other countries, and more especially in Italy, its parent country, the character of Renaissance architecture was chiefly determined, not by national traditions and developments, but by the personality and training of individual architects, and naturally the greater their genius, the greater was their influence, not on architecture alone, but on the men who surrounded them, and even on those who came after them. As in Italy, Michelangelo and Palladio dominated the host of artists, so it was in England with Inigo Jones and Wren. For this reason it is necessary to conceive all these men, not as architects merely who carried out schemes to meet the needs of others, but as men of genius bent on carrying out their own ideas in design.

Inigo Jones (A.D. 1573–1652), by his dominating personality and genius, was responsible for the remarkable change which now took place, and which amounted almost to an architectural revolution. His prolonged studies in Italy, more especially of the works of Palladio, caused him to shake himself free from the transition style of the preceding period. Thus it came about that the character of the Late Renaissance in England was largely moulded by the dogmatic restrictions imposed by the precepts of Palladio, which were adopted and practised by his English disciple; but as the Commonwealth proved to be an interregnum in architecture as in government, some

of the cherished designs of Inigo Jones were never carried to completion. His principal buildings are mentioned on p. 715.

Sir Christopher Wren (A.D. 1632–1723) was the second great architectural personality of this period. Scholar, mathematician, and astronomer, his early scientific training developed his constructive power, and largely counterbalanced his lack of early architectural training; for he did not start the study and practice of architecture until somewhat late in life, when in A.D. 1662 he became assistant in His Majesty's Office of Works. As Inigo Jones had come under Italian, so Sir Christopher Wren came under French influence. He was in Paris in A.D. 1665, when the Palais du Louvre was in course of extension, and he then became associated with the group of architects and artists, such as Bernini, Mansard, and others, attached to the court of Louis XIV, and he studied Renaissance buildings not only in Paris, but also in the surrounding country. As he never visited Italy, the force of this French influence was further accentuated, and, moreover, his royal patron, Charles II, had been an exile at the French court, and had there imbibed similar ideas. The destructive ravages of the Great Fire of London (A.D. 1666) offered Wren an immediate opportunity for practising his art on a grand scale in the rebuilding of S. Paul's and the city churches, although he was not allowed to exercise his genius by executing his plan for the rebuilding of the City of London. Wren, apart from the palaces at Hampton Court (p. 726) and Greenwich (p. 726), was called upon for the most part to design the smaller yet commodious dwelling-houses of the middle classes, who now formed an integral part of the social life of England; but here a new note is struck with the advent of Dutch influence under William of Orange, when brickwork gave a special character to the architecture. Wren had, in an unusual degree, the power of adapting his designs so as to secure the best results from the financial means at his disposal, and, as Opie has said, his "designs are mixed with brains"; for he produced his effects, not by expensive elaboration, but by careful proportion of the various parts, by concentration of ornament in the most telling position, or by one outstanding feature in the design. His buildings, too, owe much of their character to the use of Portland stone, which proved to have such good weathering properties; while in his domestic buildings, and some of his city churches, he made an effective use of brick with stone dressings, as at Hampton Court and S. Benet, Paul's Wharf, London. Whether in the graded greys of quarried stone or in the warm reds of hand-made bricks, Wren's buildings seem native to the site for which they were designed, and his influence has permeated all subsequent architecture in England. His principal buildings are referred to later (p. 719), and the illustration (pp. 727–728) gives a good idea of the types of buildings which he designed.

Georgian Architecture.—Under this title is classed the architecture of the reigns of Anne (A.D. 1702–14), George I (A.D. 1714–27), George II (A.D. 1727–60), George III (A.D. 1760–1820), George IV (A.D. 1820–30).

Many pupils and followers of Inigo Jones and Wren, some of whose chief buildings and designs we shall describe, were, like most Renaissance architects of all countries, men of general culture and many-sided in their artistic activities, and this is indicated in the short notices which follow.

Sir John Vanbrugh (A.D. 1664–1726) was a writer of dramas as well as designer of palaces, besides being a military officer, a wit, and a courtier, who became Controller of the Royal Works, and who even attempted a theatre on a monumental scale for his own plays. Nicholas Hawksmoor (A.D. 1666–1763) held government appointments, and was clerk of the

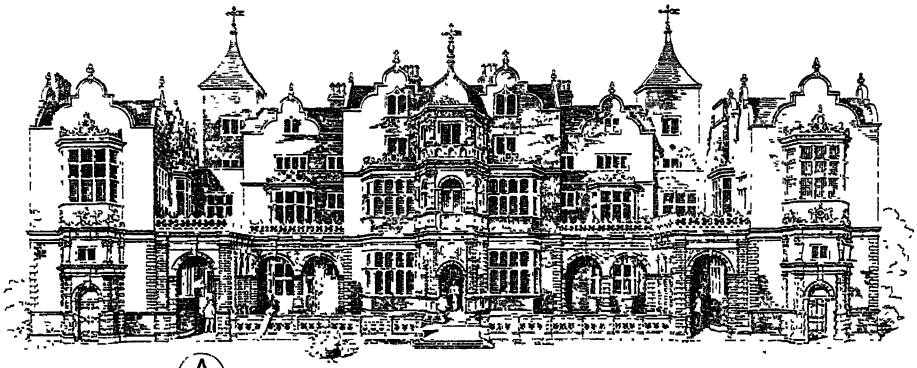
works at Kensington Palace and Greenwich Hospital. James Gibbs (A.D. 1683–1754), besides enjoying a considerable practice at the Universities, published his architectural designs in book form. William Kent (A.D. 1684–1748) collaborated with his patron, the Earl of Burlington, whom he had met in Rome, and he was described by Horace Walpole as a " painter, architect, and the father of modern gardens." George Dance (A.D. 1700–68) designed many city buildings while architect to the City of London ; and his better-known son (A.D. 1741–1825), who succeeded him in that post, became a foundation member of the Royal Academy. Robert Wood, by his books on the ruins of Palmyra and Baalbek (A.D. 1753–57), created a taste for Roman grandeur. This was put into practice when John Wood (A.D. 1704–64), of Bath, with his son (A.D. 1727–82), replanned the city of Bath and laid out its noble Crescent and stately Circus. Robert Adam (A.D. 1728–92) published his work on " Diocletian's Palace at Spalatro " which had a marked influence on subsequent architecture ; while the Brothers Adam did not design on the grand scale only, but are also known throughout the world for their decorative work in chimney-pieces, ceilings, and furniture generally. Sir William Chambers (A.D. 1726–96) had the distinction of being the first Treasurer of the Royal Academy, while his " Treatise on the Decorative Part of Civil Architecture " is still a guide for architects, especially as regards the proportions of the Orders (pp. 756, 757). He still adhered to the Anglo-Palladian traditions during the Greek Revival, and his work is correct and refined. The influence of his travels in the East is seen in the Chinese Pagoda, Kew, and is recorded in his book of " Designs for Chinese Buildings," and in his " Dissertation on Oriental Gardening " ; while he shares the honours with Chippendale of adapting Chinese forms to decorative furniture. Sir John Soane (A.D. 1753–1837), a pupil of the younger Dance, studied in Italy, and was a pioneer of the Classic Revival, of which the Bank of England is an outstanding example (p. 743). He made the famous collection of models, casts, drawings, and fragments of ancient architecture in his house in Lincoln's Inn Fields, all of which he left to the nation as a museum.

Among architects of less note are the following : William Talman (d. A.D. 1715) ; Colin Campbell (d. A.D. 1734), compiler of the " Vitruvius Britannicus," which contains the plans of many houses ; Thomas Archer (d. A.D. 1743), a pupil of Vanbrugh ; Isaac Ware (d. A.D. 1766), the author of " A Complete Body of Architecture " ; Henry Holland (A.D. 1740–1806) ; James Gandon (A.D. 1742–1823), a pupil of Sir William Chambers. James Wyatt (A.D. 1748–1813), who studied in Rome, was responsible for so much destruction of Renaissance work in cathedrals that Pugin dubbed him " the Destroyer " ; while the spurious Gothic which he inserted reflects his lack of understanding of the true principles of Gothic architecture.

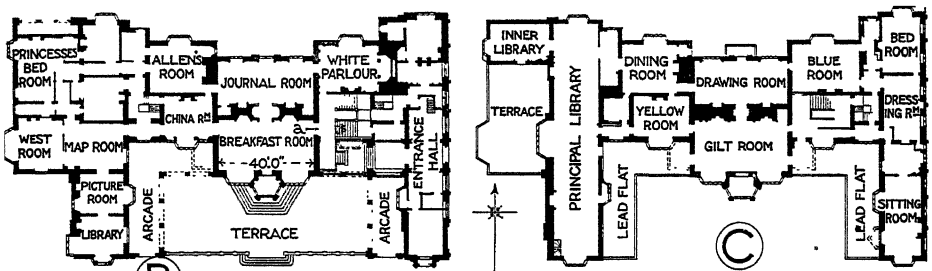
The evolution of a purely English type of dwelling-house from the formal Stuart period was now effected. English architecture, however, which during this period was still chiefly civic and domestic, reveals the influence of Italy, and was frequently the product of the rules and precepts of Italian architects, and the Orders were generally introduced into the design. This was fostered by the publication, early in the century, of " Inigo Jones' Designs " by Kent, and " The Architecture of Andrea Palladio," with notes of I. Jones, by Leoni in A.D. 1742, and " Antiquities of Rome," which had been first published at Venice in A.D. 1554, sarcastically referred to by Pope :

> " You show us Rome was glorious, not profuse,
> And pompous buildings once were things of use.

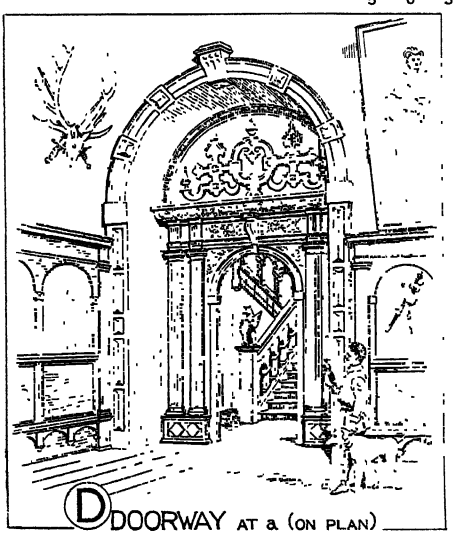
HOLLAND HOUSE : KENSINGTON



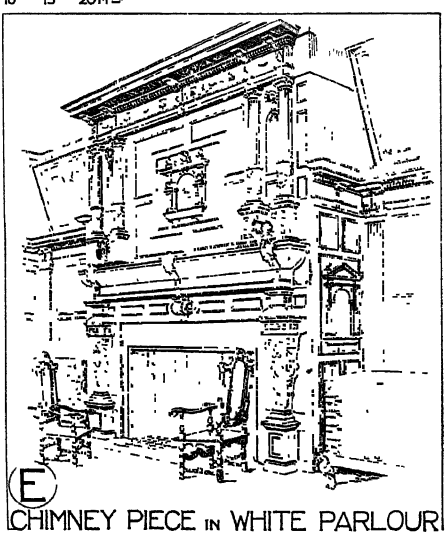
(A) SOUTH FRONT AS EXISTING IN A.D. 1837



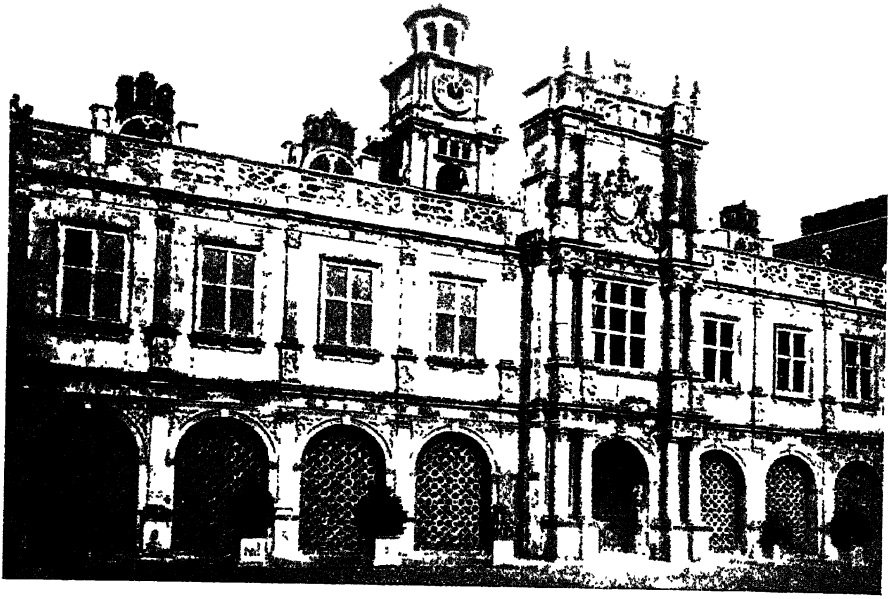
(B) GROUND PLAN FIRST FLOOR PLAN (C)



(D) DOORWAY AT a (ON PLAN)



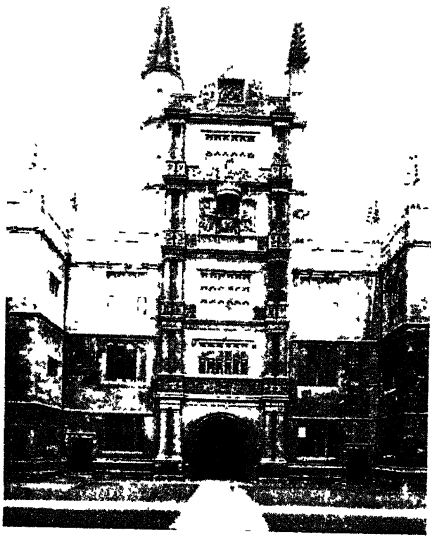
(E) CHIMNEY PIECE IN WHITE PARLOUR



A. Hatfield House, Herts: South Façade



B. Gate of Honour, Caius College, Cambridge



C. Tower of the Bodleian Library, Oxford

Yet shall, my Lord, your just, your noble rules,
Fill half the land with imitating fools ;
Who random drawings from your sheets shall take,
And of one beauty many blunders make ;
Load some vain church with old theatric state,
Turn arcs of triumph to a garden gate ; "

A rage for symmetry and for ornate exteriors too often dominated the design, regardless of internal comfort and convenience, especially in the larger mansions, and this phase of building design was also satirised by Pope :

" 'tis very fine,
But where d'ye sleep, or where d'ye dine ?
I find by all you have been telling,
That 'tis a house, but not a dwelling."

Lord Chesterfield, too, is quoted as advising General Wade to take a lodging opposite to the Palladian mansion designed for him by Lord Burlington, seeing that he liked nothing about it but the façade. The character of these Georgian houses mainly depends upon the influence of Inigo Jones and Sir Christopher Wren. The smaller houses of the simple block plan derived from the type seen in the Queen's House, Greenwich, and Chevening, and the larger mansions, with their pediments and porticoes and symmetrically disposed wings, were founded upon the country mansions designed by Palladio which Inigo Jones introduced into England, and thus broke away from the Mediæval tradition in house-planning, which had hitherto continued in use. The architecture of this period also owes much of its interest to the new types of building—public, civic, commercial, and governmental—erected to satisfy the increasing needs of the community.

The Baroque style.—We cannot dismiss late Renaissance in England without a reference to the Baroque style, which had its birth in Rome (p. 545) and later appeared in England as in other countries. It is natural that in penetrating to our island shores it should have suffered a sea change, and also that, like preceding styles, it should have been modified by our sterner national characteristics. England had not been tyrannised over by Inigo Jones and his school to anything like the same extent as Italy had been by Palladio and the Schoolmen, and so there was not the same reason for revolt. Although evidences of the Baroque spirit are not wanting in the later buildings of Sir Christopher Wren, it is safe to say that English conditions were not favourable to its full development, nor did the Jesuits gain a strong footing and build many churches in the Baroque style in our Protestant country. It is, moreover, worthy of note that, when the Baroque movement would naturally have been at its highest development in England, its adoption was largely arrested by the taste of William III, who was not only a Protestant, but also a Dutchman, and we have already seen that it had not been acceptable in his native country. The Baroque tendency appeared even as early as in the porch of S. Mary, Oxford (p. 719), with its twisted columns and broken pediment, and in the York Water-Gate, London (p. 712 c), by Inigo Jones, and later in some of Sir Christopher Wren's designs, while some of his pupils and followers, Hawksmoor, Gibbs, and Vanbrugh, also favoured the new mode. The Baroque, striving after freedom in design and novelty of treatment, had, however, fuller play in small decorative features, such as altar-pieces, marble fonts, mural tablets, organ cases, and sepulchral monuments in churches throughout the country. The principal buildings of the Georgian period are mentioned on p. 733.

Modern architecture is considered later (p. 764).

3. EXAMPLES

EARLY RENAISSANCE

A. ELIZABETHAN ARCHITECTURE (A.D. 1558–1603)

MONUMENTS, TOMBS, AND FITTINGS

The Early Renaissance was heralded by a number of smaller monuments and fittings erected in existing churches, as in other countries (pp. 758, 761 M).

The **Culpepper Tomb, Goudhurst** (p. 758 C), the **wall tablets at Peterhouse College, Cambridge** (p. 758 J), and **All Hallows, Barking, London** (p. 758 G), the **pulpit, North Cray** (p. 758 A), and the **chapel screen, Charterhouse** (p. 758 B), are examples of monuments to be found in churches throughout the country, while the **stalls, King's College, Cambridge** (A.D. 1531–35) (p. 761 M), are amongst the earliest examples of the newly introduced style.

The **Tomb of Henry VII** (A.D. 1512–18) (p. 350), in Westminster Abbey, by Torrigiano, is an early and exquisite example of Renaissance art. It is a black marble table tomb, with angle Corinthian pilasters, between which are the royal arms, while above are winged cherubs and recumbent life-like effigies of Henry VII and his queen.

ELIZABETHAN MANSIONS

The best-known Elizabethan mansions are: **Charlecote, Warwickshire** (A.D. 1558); **Loseley Park, Surrey** (A.D. 1562); **Longleat House, Wilts** (A.D. 1567–80) (p. 696 D); **Kirby Hall, Northants** (A.D. 1570) (pp. 699 B, 716), by John Thorpe; **Penshurst Place, Kent** (portion) (A.D. 1570–85) (p. 370); **Burghley House, Northants** (A.D. 1577–87) (pp. 696 A, 752 B), perhaps by John Thorpe; **Montacute House, Somerset** (A.D. 1580–1601) (p. 696 B); **Wollaton Hall, Notts** (A.D. 1580–88) (p. 696 C), by John Thorpe and Robert Smithson; **Longford Castle, Wilts** (A.D. 1591) (pp. 695 A, 696 E), by John Thorpe; **Haddon Hall, Derbyshire** (long gallery) (A.D. 1567–84) (p. 379); **Westwood House, Worcester** (A.D. 1590); **Bramhall Hall, Cheshire** (A.D. 1590–1600); **Hinchingbrooke Hall** (A.D. 1602) (p. 752 C); **Sizergh Castle, Westmorland** (A.D. 1558–75) (p. 694 B), which was enlarged in this period, and **Lower Walterstone, Dorset** (A.D. 1586).

These mansions show a general similarity in their arrangement with those of the Jacobean period, and so we give here detailed descriptions of the plan and usual features, which were evolved from those of the Tudor period (p. 379). The smaller houses had a central hall flanked at one end by kitchen and offices, and at the other by withdrawing- and living-rooms; while the larger type was quadrangular with similar accommodation, but with additional rooms grouped round the court, and with a gatehouse in the centre of the entrance side, as at Oxburgh Hall (p. 371 K), Compton Wynyates (p. 376 C), and Sutton Place (p. 376 G). Elizabethan architects adhered to the Tudor plan for smaller houses, but they evolved the E-shaped plan from the quadrangular plan by omitting one side, as at Hatfield, thus admitting sunlight and allowing freer circulation of air (p. 696 F). It is even recorded that, with this object in view, one side of the "quad" at Caius College, Cambridge, was removed. The gatehouse often became a

detached building, as at Burton Agnes, Yorkshire ; Cranborne, Dorset, and Stanway, Gloucestershire. Certain features, such as the great hall, grand staircase, and long gallery, are common to the typical houses mentioned above, many of which were framed in extensive formal gardens, as at Longford Castle and Hatfield House (p. 695).

i. *The Great Hall* (pp. 696, 700 D) still retained its central position, but became more than ever a hall of state, connecting the various parts of the mansion. The walls were cased internally in oak panelling to a height of 8 or 10 ft., surmounted by ancestral portraits, armour, and trophies of the chase. The fireplace, with its huge dog-grate, was an elaborate feature flanked by columns, while above were ranged heraldic devices of the owners. The hall was covered either by an open timber roof, as that over the Middle Temple Hall (p. 409 H), or with elaborately moulded plaster panels (p. 693 A). At the entrance end the carved oak screen supported the minstrels' gallery and screened off the kitchen department beyond ; while at the other end of the hall was the lofty bay window and raised daïs, from which were reached the living-rooms of the family. The same general arrangement of hall plan was adopted in the colleges of Oxford and Cambridge, and the Inns of Court, London.

ii. *The Grand Staircase*, as at Knole House (p. 693 B) and Blickling Hall (p. 755 B, C), with carved newels and pierced balustrades, and usually adjacent to the hall, forms a spacious and dignified approach to the rooms above, and its prominence as a feature is in marked contrast with the inconvenient corkscrew stairs of the Mediæval period.

iii. *The Long Gallery* (pp. 693 C, 696, 700) is perhaps the most striking feature of an Elizabethan mansion, with ornamental chimney-pieces, panelled or tapestried walls, large mullioned windows, and modelled plaster ceiling. Long, low, and narrow, though varied as at Haddon by room-like bays (p. 693 C), the gallery often ran the whole length of the upper floor of the house and connected the wings on either side of the central hall (p. 696 F). Its original purpose is somewhat doubtful ; it may have been designed merely as a connecting corridor, as a covered promenade, or as a " picture gallery " which was also used to display the art treasures which it had now become the fashion to collect ; or it may even have been designed to serve all three purposes. It would almost seem as if the aristocracy of Elizabethan times in England rivalled one another in the length of their galleries, even as did the noble families of Mediæval Italy in the height of their towers. Some of the finest of these galleries are : Hardwick Hall (A.D. 1576) (p. 700 B), 166 ft. by 22 ft. ; Montacute House (A.D. 1580), 170 ft. by 20 ft., and Haddon Hall (A.D. 1589), 109 ft. by 18 ft.

iv. *The Withdrawing-room* or " solar " of previous times was, in addition to these pronounced and distinguishing features, now often elaborately finished with carved chimney-pieces and panelled walls, as at Crewe Hall, Cheshire (A.D. 1636) (p. 694 A), and Stockton House, Wiltshire (A.D. 1610) (p. 755 A), where it even rivalled a long gallery in treatment.

Bedrooms were multiplied and were often elaborate, as at Sizergh Castle (p. 694 B), and a private chapel was frequently incorporated in the building (p. 696 D, F).

Hardwick Hall, Derbyshire (A.D. 1576–97) (p. 700), by Robert Smithson, is somewhat unusual in plan (p. 700 B), consisting of a rectangular block with projecting bays. The exterior is famous for its large mullioned and transomed windows, giving rise to the saying " Hardwick Hall, more glass than

wall," while bay-windows, carried up as towers, relieve the skyline and are terminated by open scroll-work with the initials " E.S.," for Elizabeth, Countess of Shrewsbury, known as " Bess of Hardwick."

Castle Ashby, Northants (A.D. 1572) (p. 700), a reputed design of John Thorpe, is situated on high ground, and was originally in the form of a three-sided court, which included the great hall (60 ft. by 30 ft.), with screens, bay-window, and staircase turrets. The lettered balustrade contains the words " Nisi Dominus ædificaverit," etc. (Ps. cxxvii). Inigo Jones added a fourth side (A.D. 1624), with the long gallery (91 ft. by 15 ft. 6 ins.), and this addition illustrates the difference between the Elizabethan and Anglo-Classic styles (p. 700 C).

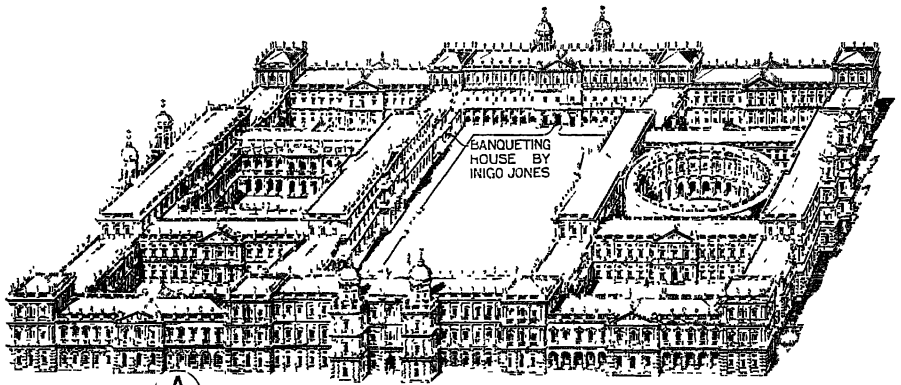
ELIZABETHAN COLLEGES

During the Mediæval period many colleges had been founded at the universities (p. 391), and as the day of the pious founder had not yet passed, new colleges were still endowed both at Oxford and Cambridge. These were, of course, built in the Elizabethan style, which retained many Gothic features; while additions were also made to Mediæval colleges. Thus revival of learning and Renaissance in architecture went hand in hand in our old universities. At **Cambridge** there was **Emmanuel College** (A.D. 1584), with its dignified façade; the beautiful little **Gate of Honour, Caius College** (A.D. 1565–74) (p. 706 B), probably designed by Theodore Haveus of Cleves; **Nevill's Court, Trinity College** (A.D. 1593–1615), and new quadrangles to **Sidney Sussex College** (A.D. 1595) and **S. John's College** (A.D. 1598) (p. 391), by Ralph Simons. At **Oxford** there is a fine example of Renaissance work in **Jesus College** (A.D. 1571) by Holt. Other colleges and additions at both universities belong to the later periods (pp. 714, 744). Among the Inns of Court, London, **Gray's Inn Hall** (A.D. 1555–60), and the famous **Hall of the Middle Temple**, with its magnificent hammer-beam roof (A.D. 1562–72) (p. 409 H), partly date from this period.

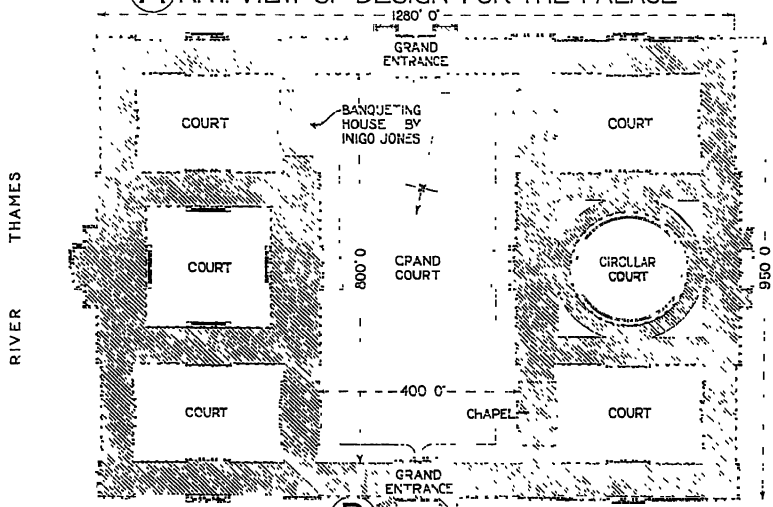
ELIZABETHAN SCHOOLS

The reign of Elizabeth saw the beginning of many schools, such as Repton (A.D. 1557), Merchant Taylors (A.D. 1561), Highgate (A.D. 1565), Rugby (A.D. 1567), Harrow (A.D. 1571), and Uppingham (A.D. 1584), and some were the product of joint founders, as at Wakefield, Ashbourne, and Sandwich. The Charterhouse (A.D. 1611) and Dulwich School (A.D. 1619) both started under James I. The Commonwealth fostered old schools and established new ones, notably in Wales, at Cardiff, Carnarvon, and Denbigh; while the Restoration period proved anti-educational, and it was not until the nineteenth century that a new stimulus was given to education. Subsequent to the Restoration period, education saw a new development in the increase of elementary schools for the poor, and over one hundred such schools were established in London in Queen Anne's reign; the Blue Coat School was founded at Hertford (A.D. 1683) on the model of Christ's Hospital, London, while the Foundling Hospital, London, received its charter in A.D. 1739.

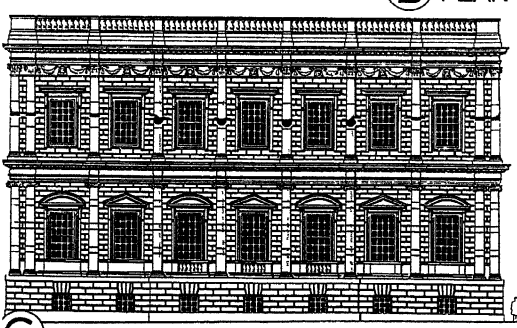
WHITEHALL PALACE : LONDON



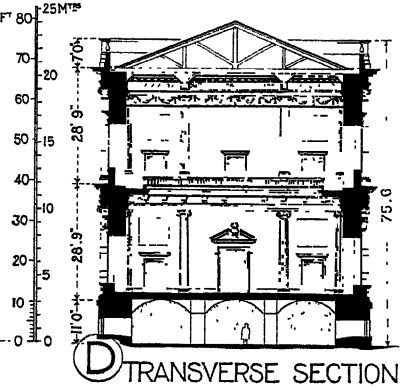
(A) N.W. VIEW OF DESIGN FOR THE PALACE



(B) PLAN

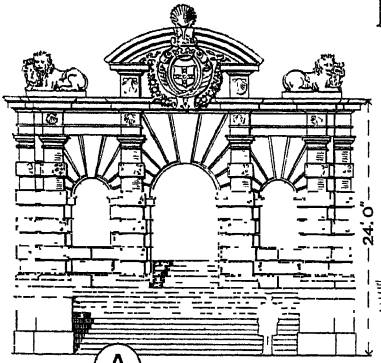


(C) THE BANQUETING HOUSE: WHITEHALL FACADE

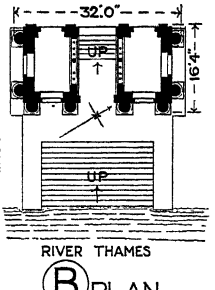


(D) TRANSVERSE SECTION

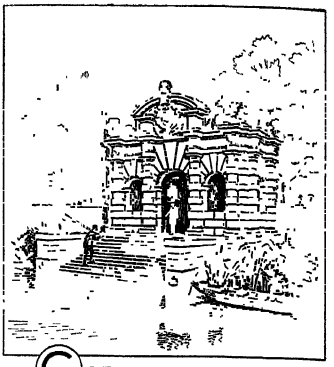
YORK WATER-GATE LONDON



A ELEVATION

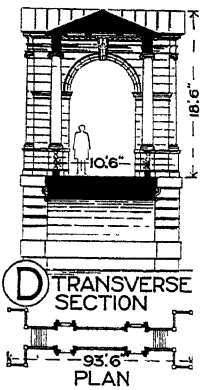


B PLAN

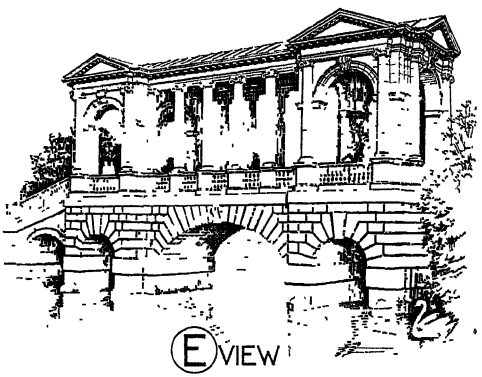


C ORIGINAL ASPECT

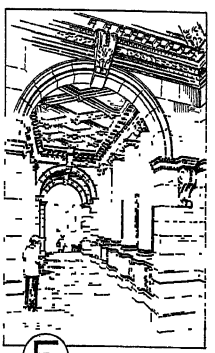
THE COVERED BRIDGE: WILTON



D TRANSVERSE SECTION
PLAN

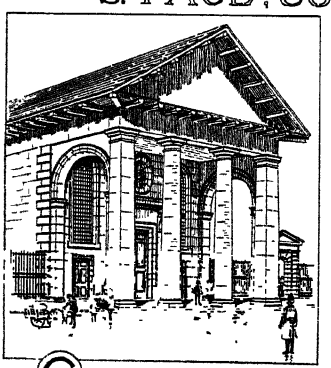


E VIEW

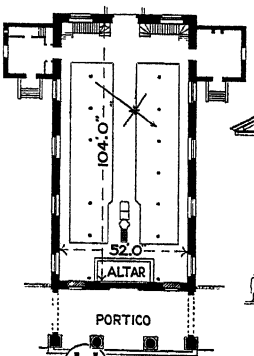


F INTERIOR

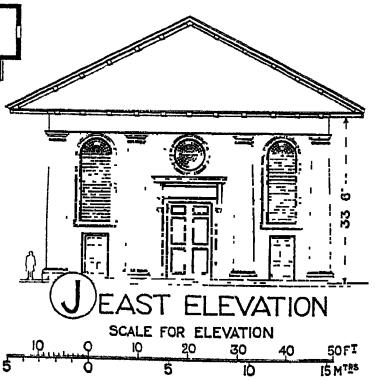
S. PAUL, COVENT GARDEN: LONDON



G EAST PORTICO



H PLAN



J EAST ELEVATION

ELIZABETHAN TOWN HOUSES

Many interesting houses were built, not only in London, but also in country towns; for in days of slow and difficult travelling by coach, many of the landed gentry, especially in parts remote from London, found it convenient to have their town residences close at hand. York, Chester, Shrewsbury, Ludlow, Coventry, Canterbury, Exeter, Truro, and many another town bear testimony to the artistic design and craftsmanship of the houses of this period. In London itself there remain, in spite of the Great Fire, the notable half-timber building of Staple Inn (A.D. 1581), with its fine hall and hammer-beam roof, and portions of the Charterhouse, including the great hall (A.D. 1571), added by the Duke of Norfolk; while the façade of Sir Paul Pindar's House (A.D. 1600) is now preserved in the Victoria and Albert Museum, as is also a panelled room from the Palace of Bromley-by-Bow (A.D. 1606), which, with its plaster ceiling (p. 761 B), recalls the glories of such palatial buildings although it actually dates from the Jacobean period.

EARLY RENAISSANCE

B. JACOBEAN ARCHITECTURE (A.D. 1603–25)

JACOBEAN MANSIONS

The great era of mansion building, which had commenced under Elizabeth, continued in the reign of James I.

Hatfield House, Herts (A.D. 1607–11) (pp. 693 A, 696 F, 706 A), built for Robert, first Earl of Salisbury, stands pre-eminent amongst the many noble piles of this period in displaying the special characteristics and elaboration of treatment considered suitable for the country mansion of a nobleman. The house is E-shaped in plan (p. 696 F), with central hall and projecting symmetrical wings, and is set off by formal gardens, designed with the same care as is displayed in the planning of the house itself (p. 695 B). The entrance front, 225 ft. long, is of daringly plain brickwork with stone mullioned windows, relieved by a projecting central entrance; while the bay-windows of the wings are taken up as small lateral towers, and the building is finished by a flat roof and balustrade and dominated by a central clock-turret. The south front (p. 706 A) is much more ornate in treatment, with Doric, Ionic, and Corinthian Orders superimposed to form a centre-piece flanked by an arcaded ground storey with mullioned windows and pierced parapet. The two-storeyed hall (p. 693 A), with its large mullioned windows, minstrels' gallery, and modelled plaster ceiling, is a fully developed Renaissance edition of the traditional Mediæval hall; while the long gallery, chapel, grand staircase, and suites of private rooms all contribute to the completeness of this Jacobean mansion.

Holland House, Kensington (A.D. 1607) (p. 705), by John Thorpe, erected for Sir William Cope and afterwards inherited by the Earl of Holland, has been the residence of many famous men. The plan (p. 705 B, C) is H-shaped, with entrance at one end, as at Bramshill (p. 696 G), and arcades on the south bordering a fine terrace (p. 705 A). The central porch, carried up as a tower with ogee roof, is flanked by bay-windows and by curved gables, while right and left are the later arcades and wings (A.D. 1622). The interior has been altered so that the grand staircase encroaches on one of the arcades.

The doorway (p. 705 D) and the chimney-piece in the White Parlour (p. 705 E) are noticeable features.

Bramshill House, Hants (A.D. 1605–12) (pp. 696 G, 752 A, D, J), was designed for Lord Zouche, probably by John Thorpe. The plan (p. 696 G) is of the H-type, with the entrance through an arcaded porch direct into the hall, which thus loses its feudal character, but still retains the daïs. An unusual feature is the internal area for light. The long gallery (130 ft. long), the terrace with its arcades (p. 752 J), and the oriel window (p. 752 A) are among many beautiful features of this building.

Blickling Hall, Norfolk (A.D. 1620) (pp. 696 J, 752 G, 755 B, C, F), is in brick and stone, as usual in Norfolk, and the plan is not unlike that of Bramshill. It has two internal courts, the outer court giving entrance to the hall, which is a thoroughfare room, as at Aston Hall (p. 696 H) ; at the external angles of the building are square towers. The principal entrance (p. 752 G), reached across the moat, has an arched opening with carved spandrels, framed with Doric columns and entablature, surmounted by the arms of Sir Henry Hobart. The staircase (p. 755 B, C) is a majestic feature, with the upper part in two opposite flights—unusual in this period—and it has boldly carved newels surmounted by figures, and an arched balustrade. The chimney-piece (p. 755 F) has flanking pilasters diminishing towards the base and surmounted by Hermes figures which frame heraldic devices.

Some other well-known Jacobean mansions are : **Chastleton House, Oxford** (A.D. 1603–14) ; **Audley End, Essex** (A.D. 1603–16) (p. 761 A), by John Thorpe ; **Knole House, Kent** (A.D. 1605) (p. 693 B) (re-modelled) ; **Charlton House, Wilts** (A.D. 1607) ; **Stockton House, Wilts** (A.D. 1610) (p. 755 A) ; **Aston Hall, Warwickshire** (A.D. 1618–35) (pp. 696 H, 761 C), from designs of John Thorpe ; and **Bolsover Castle, Derbyshire** (A.D. 1613), by Huntingdon Smithson.

JACOBEAN COLLEGES

This period saw a number of additions to colleges both at Oxford and Cambridge.

The **Bodleian Library, Oxford** (A.D. 1613–18) (p. 706 C), formerly the Old Schools, by Thomas Holt, is a conspicuous instance of the work of the period, for the tower over the gateway is a curious but effective mixture of traditional Gothic and new Renaissance, with mullioned windows and canopied niches flanked by the five Orders of architecture, one above the other ; while the whole is capped by Gothic pinnacles.

Thomas Holt was very busy at the older University at this time, for at Merton College he designed the entrance, with superimposed Orders (A.D. 1610), and library ; Wadham College entrance and hall screen (A.D. 1610–13), besides additions to Oriel and Jesus Colleges (A.D. 1612) ; while Pembroke College (A.D. 1624) is by another hand. At Cambridge the quadrangle of Clare College (A.D. 1634), by Westley, belongs to the latter part of the period, but it was not until later years that Worcester College, Oxford (A.D. 1714), and Downing College, Cambridge (A.D. 1800), were founded.

JACOBEAN MANOR HOUSES

Mediæval manor houses supplied a good ground-work for Jacobean architects to elaborate with Renaissance additions and fittings, such as we see in South Wraxall Manor, Wilts, and Cranborne Manor House, Dorset

(A.D. 1612), which is a Tudor building with a Jacobean casing; while Fountains Hall, Yorkshire (A.D. 1611), is a complete example, built largely with material from the Mediæval abbot's house.

JACOBEAN TOWN HOUSES

The building now known as S. Peter's Hospital, Bristol (A.D. 1607), is a fine half-timbered house of this period, with overhanging upper storeys and panelled "Court Room" with carved chimney-piece and modelled plaster ceilings.

JACOBEAN MARKET HALLS

Many market halls, as at Shrewsbury and Chipping Campden, show how the Jacobean style was applied to buildings for all purposes in this period.

JACOBEAN HOSPITALS AND ALMSHOUSES

The need for hospitals and almshouses, which had already been recognised in the Mediæval period (p. 397), became greater after the Dissolution of the Monasteries, and many hospitals were erected in this period.

The Whitgift Hospital, Croydon (A.D. 1597), with its fine quadrangle, common hall, and living-rooms, still carries on the uses for which it was founded. Sackville College, East Grinstead (A.D. 1608), Weekley Hospital, Northants (A.D. 1611), Chipping Campden Hospital (A.D. 1612), Trinity Hospital, Greenwich (A.D. 1613), Trinity Hospital, Castle Rising (A.D. 1614), Eyre's Hospital, Salisbury (A.D. 1617), and Abbot's Hospital, Guildford (A.D. 1619), are a few of these buildings—all of which have a similar arrangement of hall, kitchen, chapel, and rooms for the master and inmates.

LATE RENAISSANCE

A. STUART (A.D. 1625–1702)

The architecture of this period consists largely of the work of two of England's greatest architects—Inigo Jones (p. 702) and Sir Christopher Wren (p. 703)—and their best-known buildings will now be described.

INIGO JONES (A.D. 1573–1652) (p. 702).

Chilham Castle, Kent (A.D. 1614–16), is a transitional example of brick with stone dressings. The E-shaped façade has radiating side wings at the back forming a horseshoe court; while the porch has Jacobean baluster-columns. This house is the tentative work of an artist who was destined to Anglicise and adapt for domestic use the Classical Roman style.

The **Banqueting House, Whitehall, London** (A.D. 1619–21) (p. 711), was erected by Inigo Jones on the site of the old Jacobean Banqueting House burnt down in A.D. 1619. As shown by the researches of Mr. J. A. Gotch, it was afterwards intended by John Webb, Inigo Jones' nephew and pupil, to incorporate this Banqueting House in a design for a Royal Palace which is shown on the plan (p. 711 B). This palace-scheme would have formed one of the grandest architectural conceptions of the Renaissance in England, both in extent and in the finely adjusted proportions of its various parts (p. 711 A). The complete plan of the palace (p. 711 B), with its seven courts, shows the position the Banqueting House would have occupied on the Grand Court (800 ft. by 400 ft.), twice the size of the court of the Louvre,

Paris (p. 623 E); across its intended site now runs the thoroughfare of Whitehall. The façade to Whitehall (p. 711 C), 75 ft. 6 ins. in height, is divided into a rusticated lower storey and two upper storeys, each contained within an Order in which no two adjacent columns are uniformly treated, except those in the centre. The lower windows have pediments, alternately triangular and segmental, and the upper windows have straight cornices; while festoons and masks under the upper frieze suggest the feasting and revelry associated with the idea of a royal banqueting hall. The severely Classic treatment here employed for the first time in England was the natural result of Inigo Jones' study of the correct Palladian architecture of Italy, and it constituted nothing less than an architectural revolution following directly, as it did, on the free and picturesque Jacobean architecture. This noble building has a fine interior occupying the entire height, with a gallery at the level of the upper order (p. 711 D). It was converted into a Chapel Royal by George I, and in A.D. 1894 it became the Museum of the Royal United Service Institution.

S. Paul, Covent Garden, London (A.D. 1631–38) (p. 712 G, H, J), was designed by Inigo Jones to be the "handsomest barn in England," for he was told by the Earl of Bedford to erect a church as simple and inexpensive as a barn, and he here showed, in the Tuscan portico, wide-spreading eaves and simple pediment, how it was possible to produce dignity and impressiveness by the simplest means. The arcades of Covent Garden Market, carried out in conjunction with this church, form an instance of successful town-planning.

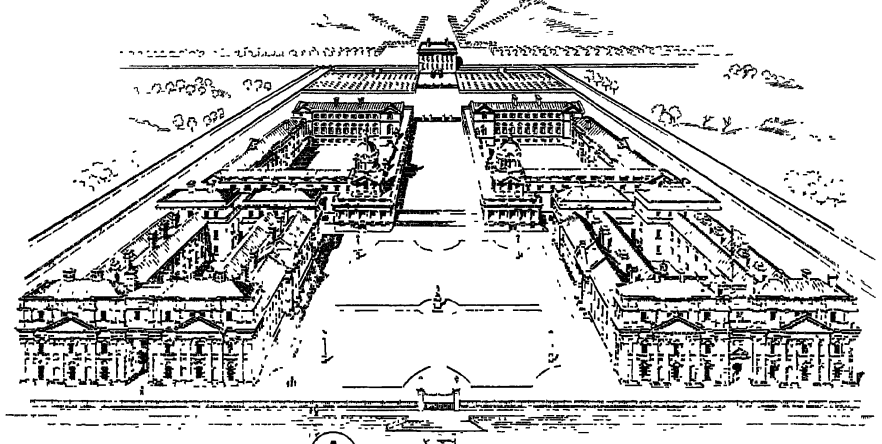
Greenwich Hospital (p. 717) is another great building scheme which owed its inception to the genius of Inigo Jones. He himself erected the Queen's House (A.D. 1635) (p. 717 C, E) for the unhappy Queen Henrietta Maria, and on the Restoration the portion known as "King Charles's Block" (p. 717 E, F) was carried out (A.D. 1661–67) by his pupil, John Webb (A.D. 1611–74). The façades, with lofty Corinthian Order and chaste Classic details, resulted from a close study of Palladian architecture and recall a similar treatment by Michelangelo on the Capitol at Rome. It represents, however, only the commencement of a great building scheme afterwards carried to completion by Sir Christopher Wren and other architects of the eighteenth century (pp. 726, 743).

York Water-Gate, London (A.D. 1626) (p. 712 A, B, C), was designed for the Duke of Buckingham and executed by the master mason, Nicholas Stone, to form the river entrance of old York House, in days when the Thames was used as a highway for the pleasure barges of the nobility, but it now stands isolated in the Embankment gardens. This is a charming little piece of monumental architecture, with rusticated masonry and Tuscan Order surmounted by a pediment with armorial bearings flanked by "lions couchants."

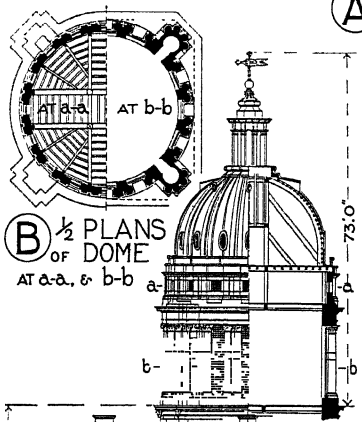
Stoke Park, Northants (A.D. 1630–36) (p. 737 N), originally consisted of a central block containing the living-rooms connected by quadrant colonnades to wings for library and chapel. This plan, derived from houses by Palladio round Vicenza, influenced the setting-out of larger Georgian houses (p. 734).

Inigo Jones designed other houses, both in town and country, such as **Houghton Hall, Beds** (A.D. 1616–21); **Raynham Hall, Norfolk** (A.D. 1630) (p. 738 E); **West Woodhay House, Berkshire** (A.D. 1635), one of the earliest examples in rubbed brickwork; **Wilton House, Wilts** (additions) (A.D. 1640–48); **Chevening Place, Kent** (A.D. 1630) (p. 737 H), with wings added later; additions to **Kirby Hall, Northants** (A.D. 1638–40) (p. 708); Houses in Lin-

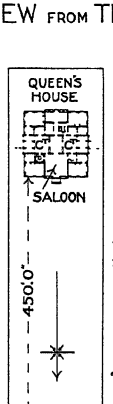
ROYAL HOSPITAL, GREENWICH

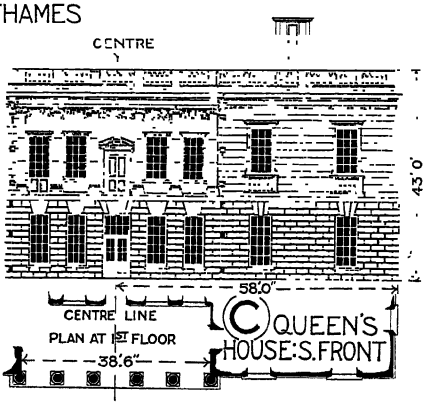


A VIEW FROM THAMES

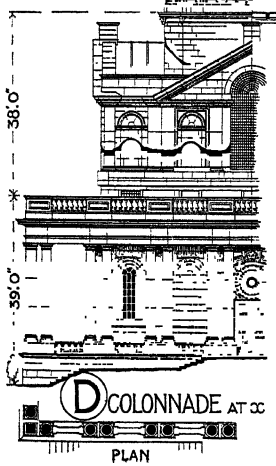


B ½ PLANS OF DOME AT a-a, & b-b



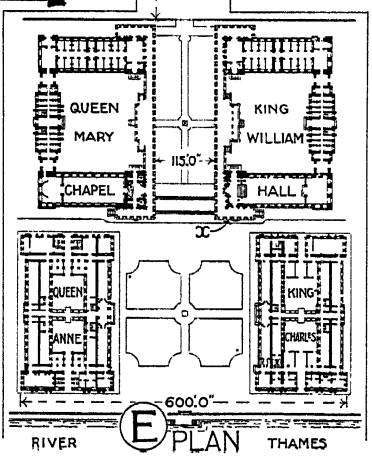


C QUEEN'S HOUSE: S. FRONT

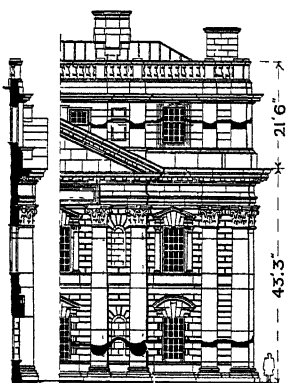


D COLONNADE AT cc

PLAN

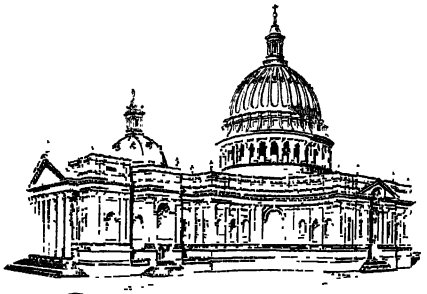


E PLAN

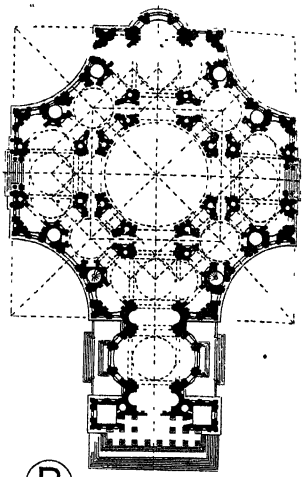


F PART OF RIVER FRONT

S. PAUL : LONDON



A SKETCH OF MODEL OF ORIGINAL DESIGN

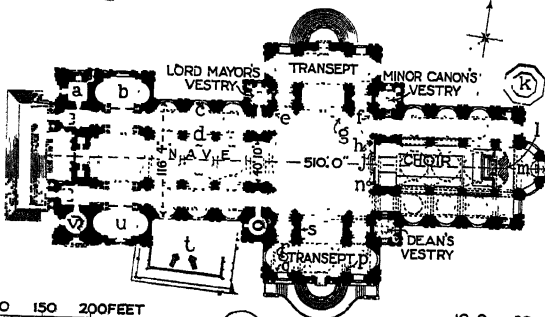


B WREN'S ORIGINAL PLAN

C LONGITUDINAL SECTION

:REFERENCE TABLE

a. BELL TOWER
b. ST DUNSTAN'S CHAPEL
C MAJ-GEN. GORDON
d. WELLINGTON MONMT
e SIR JOSHUA REYNOLDS
f. DR SAMUEL JOHNSON
g. PROJECTION OF WHISPERING GALLERY
h. LECTERN
j CHOIR SCREEN BY TIJOU
k. SITE OF PAUL'S CROSS



D PLAN

'REFERENCE TABLE.

l. REREDOS & HIGH ALTAR
m. JESUS CHAPEL
n. PULPIT
p. J.M.W. TURNER, R.A.
q. GEN. SIR JOHN MOORE
r. FONT
S LORD NELSON
t. SITE OF MEDIÆVAL CLOISTER & CHAPTER HO
u. CHAPEL OF THE ORDER OF S MICHAEL & S GEORGE
V. STAIRS TO LIBRARY

50 0 50 100 150 200 FEET
10 0 10 20 30 40 50 60 METRES
SCALE FOR PLAN

10 0 20 40 60 80 100 FEET
5 0 10 20 30 METRES
SCALE FOR SECTION

coln's Inn Fields and Great Queen Street (A.D. 1620); **Barber-Surgeons' Hall** (A.D. 1636); and (with John Webb) **Ashburnham House, Westminster** (A.D. 1640), notable for its fine staircase (pp. 741 A, 762 J). **Lincoln's Inn Chapel**, in the Gothic style (A.D. 1617–23), is one of his earliest works. **S. Katherine Cree, London** (A.D. 1630), and the **Inner Court arcades of S. John's College, Oxford** (A.D. 1636), have also been ascribed to Jones, as also the **porch of S. Mary, Oxford** (A.D. 1633). Recent investigations indicate that John Webb (A.D. 1611–74) may have been the architect of buildings such as **Coleshill, Berks** (A.D. 1650) (pp. 729 B, 737 C), and **Thorpe Hall, Northants** (A.D. 1656) (p. 737 M), which, long accredited to Inigo Jones, have influenced the smaller houses of the Georgian period (p. 733).

SIR CHRISTOPHER WREN (A.D. 1632–1723) (p. 703).

Pembroke College Chapel, Cambridge (A.D. 1663), designed for his uncle, the Bishop of Ely, was Wren's first essay in architecture, and though a daring innovation, shows his restraint in design, with its Order of Corinthian pilasters, central window flanked by niches, pediments, and hexagonal cupola (p. 762 A).

S. Paul's Cathedral, London (A.D. 1675–1710) (pp. 543, 718, 721, 722, 723, 727), ranks as Wren's masterpiece, and as one of the finest Renaissance cathedrals in Europe. The first design for the Cathedral, of which there is a model in the north triforium, was a Greek cross in plan, with projecting vestibule (p. 718 A, B), but the influence of the clergy, who desired a long nave and choir suitable for ritual, finally caused the selection of a Latin cross or Mediæval type of plan (p. 718 D). The interior has a length of 460 ft. including apse, a breadth including aisles of 100 ft., and an area of about 64,000 square ft. This plan, in which Wren wisely so spread the weight of the structure that in the crypt solids and voids are approximately equal, consists of a great central space at the crossing, like that in Ely Cathedral, crowned by a dome; choir and nave in three bays, north and south transepts with semicircular porticoes, and projecting western vestibule of coupled columns. The western bay of the nave is, unlike the other bays, square on plan, and is flanked by chapels, which project externally. This bay (p. 721 C) has coupled columns supporting lateral arches, through the northern of which is visible the Chapel of S. Dunstan, with its fine columnar screen of carved woodwork. The piers of the nave (pp. 718 C, 721) are fronted with Corinthian pilasters supporting entablature and attic, while the nave is crowned by a series of ingeniously designed saucer-like domes, about 90 ft. above the floor (p. 544 F–J). The windows in the clear-story are not visible from the exterior (pp. 718, 721 A, B, 722 F). The vault surfaces of the choir have been decorated by Sir William Richmond with coloured glass mosaics, and there is great difference of opinion as to the suitability of this treatment. The dome (pp. 718 C, D, 721 A, B) and its support presented a complicated structural problem (p. 724[1]). The dome is carried on eight piers, and is 112 ft. in diameter at the base of the high drum, at the level of the Whispering Gallery, diminishing to 102 ft. at the top of the drum, and is of triple construction. The inner dome of brickwork, 18 ins. thick, has its summit 217 ft. above the floor, while the intermediate conical dome, also of brickwork 18 ins. thick, and strengthened by a double chain of iron (p. 722 E), supports the stone lantern, ball, and cross; besides which the outer dome also rests on this intermediate cone and is formed of timber covered with lead (pp. 718 C, 722 E). Eight openings are formed in the summit of the outer dome to admit light to the inner dome (p. 722 D, E) (cf. dome of the Panthéon, Paris,

p. 635 E). The magnificent monument (pp. 718 D, 721 A) to the Duke of Wellington, by Alfred Stevens, is fittingly enshrined in Wren's great Cathedral. Like some Elizabethan monuments, it has a podium supporting the sarcophagus and recumbent effigy of the Duke, enclosed by marble Corinthian columns and crowned by an attic flanked by bronze groups, the whole surmounted by an equestrian statue.

The exterior is exceedingly effective and groups well with the central dome. The façades have two Orders, the lower Corinthian and the upper Composite, totalling 107 ft. 8 ins. in height (p. 722 F). The aisles are only one storey high, so the part above them is a screen-wall introduced to give dignity and to act as a counterweight to the flying buttresses concealed behind it, which receive the thrust of the nave vault. Considerable criticism has been directed against this screen wall, which is said to be a sham, since the space behind it is unroofed, and a suggestion is here put forward (p. 722 B) that such objections might be removed if the wall were pierced with openings so as to show the flying buttresses behind. The western façade, 180 ft. wide (pp. 722 D, 723), approached by a broad flight of steps which give scale to the building, has a central two-storeyed portico of coupled Corinthian and Composite columns superimposed, surmounted by a pediment sculptured with the Conversion of S. Paul. The portico is flanked by two beautifully proportioned tapering towers, which are most pleasing features in the design, 210 ft. high above the nave floor, that on the left containing bells and that on the right the clock. The external dome (pp. 722 A, 723) is probably the finest in Europe, for the projecting masses of masonry at the meeting of nave and transepts, forming the vestries and stairs to dome, express support from the ground upwards (pp. 543, 718 D). The colonnade round the drum, which latter has an external diameter of 140 ft., is particularly effective with three-quarter columns attached to radiating buttress-walls ; while as every fourth intercolumniation is filled with masonry, there is an appearance of strength and solidity lacking in the Panthéon, Paris. Above the colonnade is the balustrade known as the " Stone Gallery," and behind this rises an attic supporting the dome, which is crowned with lantern, ball, and cross, rising to a height of 366 ft. above the pavement.

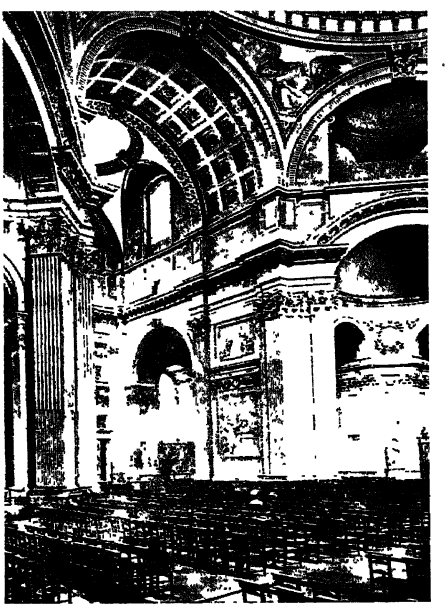
There are some striking contrasts in the history of the building of the great Metropolitan Cathedral and that of S. Peter, Rome (p. 582). S. Paul, London, had one architect and one master mason, and was built in 35 years, during the episcopate of one bishop ; while S. Peter, Rome, had 13 successive architects and numerous master masons, and the building extended over 100 years, during the pontificates of 20 popes. Mountainous in mass, with its soaring central dome and lofty lateral towers, this greatest of English Renaissance buildings appealed to the imagination of that day as rising from the mists of London, like an Alpine peak.

> " S. Paul's high dome amid her vassal bands
> Of neighbouring spires, a regal chieftain stands ;
> And over fields of ridgy roofs appear
> With distance softly tinted, side by side,
> In kindred grace, like twain of sisters dear,
> The towers of Westminster, her abbey's pride,
> While far beyond the hills of Surrey shine
> Through their soft haze, and show their wavy line."
>
> BAILLIE.

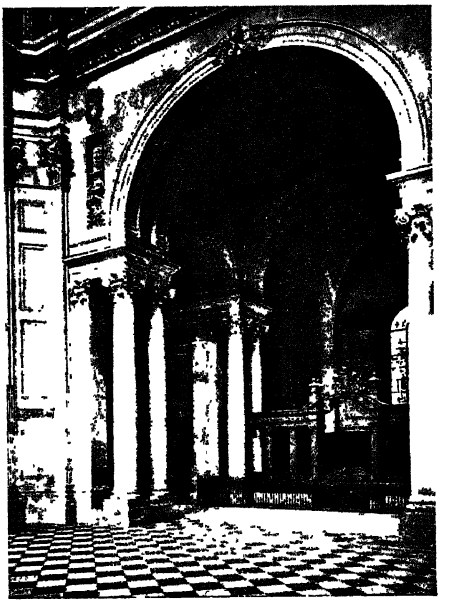
The **London City Churches** (pp. 727–728), 53 in number, designed (A.D. 1670–1711) by Wren in the Renaissance style to replace those destroyed by the Great Fire, are models of simplicity in design and restraint



A. S. Paul's Cathedral, London: Nave looking E.



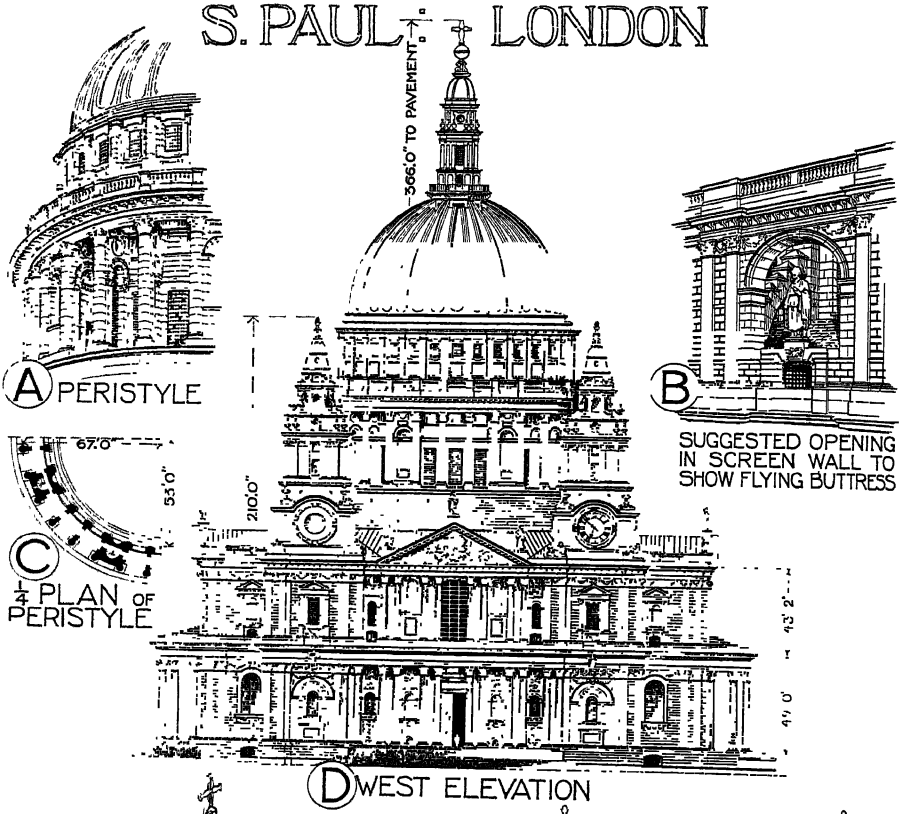
B. The Crossing

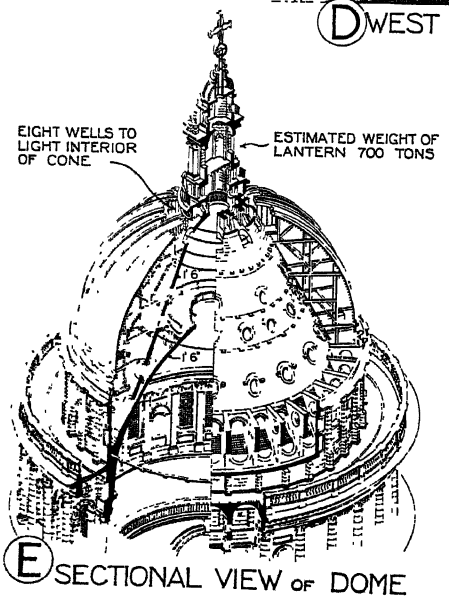


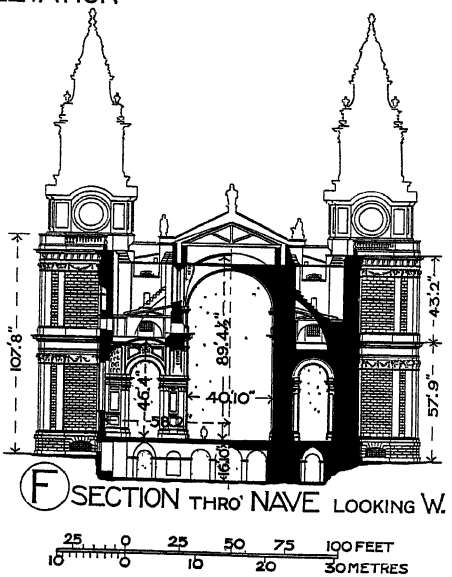
C. S. Dunstan's (Morning) Chapel

S. Paul's Cathedral, London

S. PAUL'S LONDON



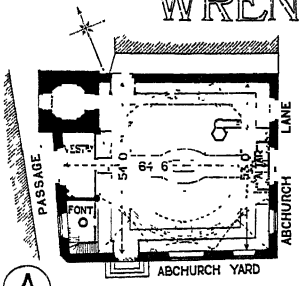




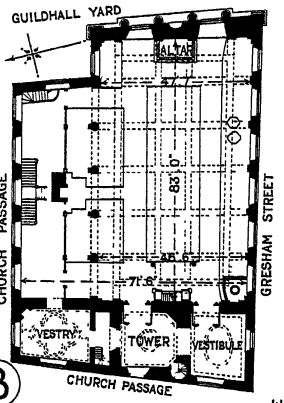


S. Paul's Cathedral, London, from W.

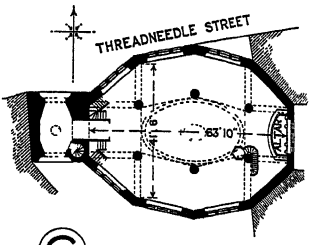
WREN'S CITY CHURCHES



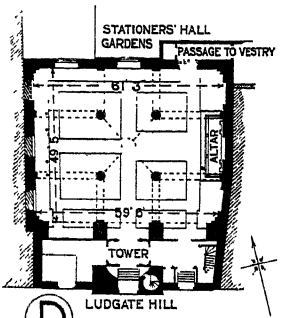
A S. MARY ABCHURCH



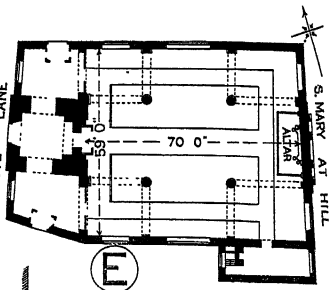
B S. LAWRENCE JEWRY



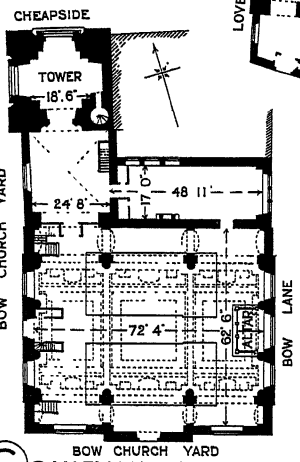
C S. BENETFINK



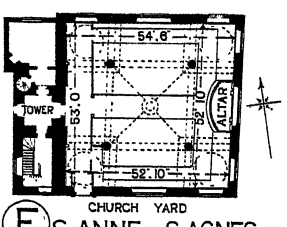
D S. MARTIN LUDGATE



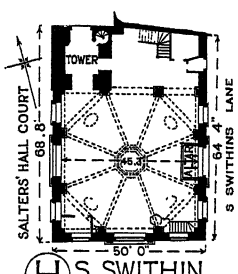
E S. MARY AT HILL



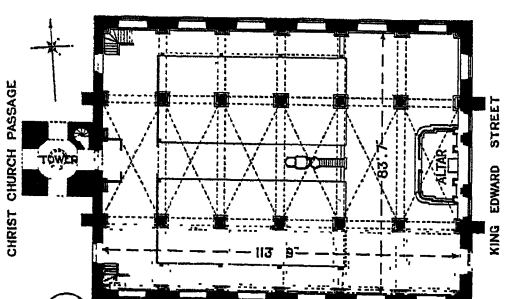
G S. MARY-LE-BOW: CHEAPSIDE



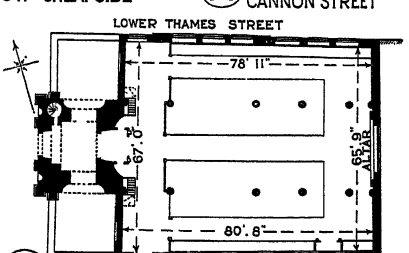
F S. ANNE & S. AGNES



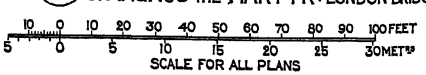
H S. SWITHIN CANNON STREET



J CHRIST CHURCH: NEWGATE STREET



K S. MAGNUS THE MARTYR: LONDON BRIDGE



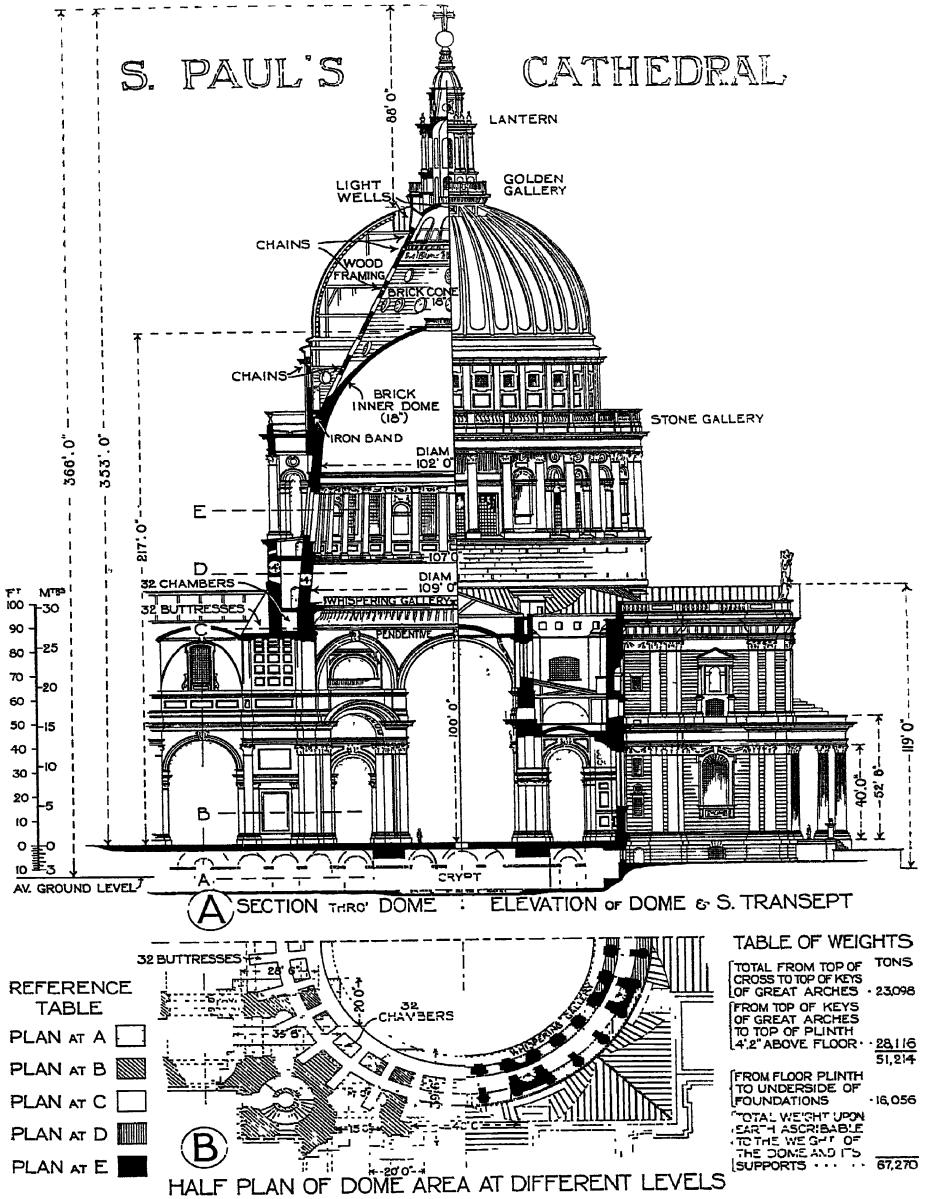
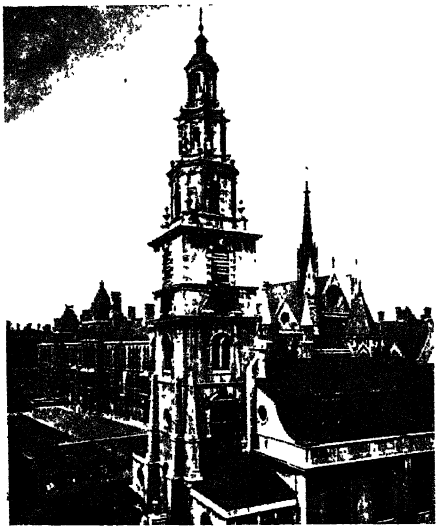


TABLE OF WEIGHTS

	TONS
TOTAL FROM TOP OF CROSS TO TOP OF KEYS OF GREAT ARCHES	23,098
FROM TOP OF KEYS OF GREAT ARCHES TO TOP OF PLINTH 4'.2" ABOVE FLOOR	28,116
	51,214
FROM FLOOR PLINTH TO UNDERSIDE OF FOUNDATIONS	16,056
TOTAL WEIGHT UPON EARTH ASCRIBABLE TO THE WEIGHT OF THE DOME AND ITS SUPPORTS	67,270

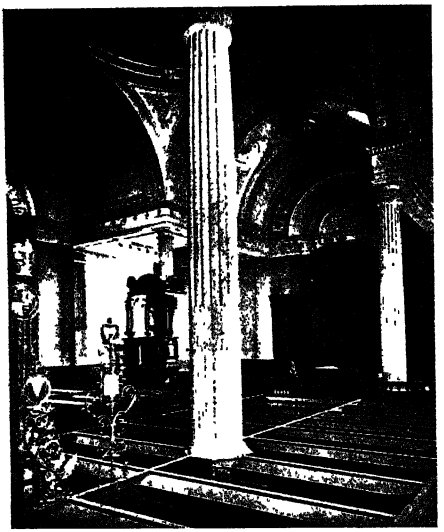
This diagram relating to the structural supports of the dome was prepared by the Author, and the calculations in the Table of Weights are those made by Mr. J. E. Drower for the S. Paul's Commission. The position of the two drums supporting the triple dome in relation to the supporting piers shows the complicated nature of the planning brought about by the placing of the nave piers so that vistas should be obtained from end to end of the Cathedral. The inner and outer drums of the dome appear to rest upon the inner half of the crypt piers, but the weight is extended over a larger area by means of the thirty-two radiating buttresses, while the four great bastions help to take the spreading weight of the dome.



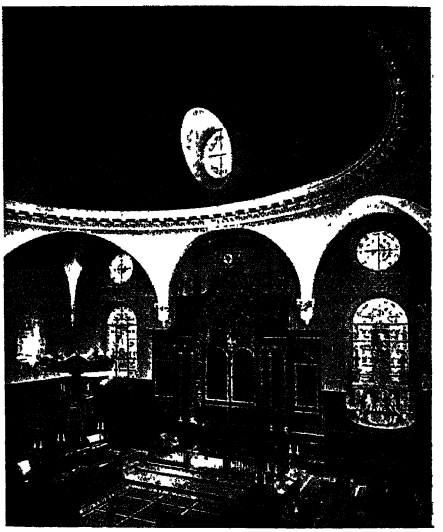
A. S. Clemeni Danes, London



B. S. Martin, Ludgate, London



C. S. Mary-at-Hill, London



D. S. Mary Abchurch, London

in treatment. The varied towers and steeples make London City one of the most picturesque in the world, and group up to form a unique setting to the Great Cathedral dome, as pictured by the late Professor Cockerell (p. 727). Many of them are most skilfully planned on cramped and awkward sites (p. 724), and are among the first churches actually designed to meet the requirements of Protestant worship, in which a central preaching-space usurps the long nave and aisles which had been suitable for the processions of Roman Catholic ritual.

S. Stephen, Walbrook (A.D. 1672–79) (pp. 727 M, 731), is famous for original and ingenious planning which produces a wonderful effect within a limited area. Enclosed in a rectangle are 16 columns, of which 8 are arranged in a circle to carry a central cupola, and the special feature here is the judicious disposition of single columns so as to produce the effect of a church with five aisles of varying width.

S. Mary-le-Bow, Cheapside (A.D. 1671–80) (pp. 724 G, 728 R, 732), is specially notable not only for "Bow Bells," but for its graceful Renaissance steeple, the masterpiece of that particular type which Wren may be said to have evolved. With the Gothic spire as his prototype, he surmounted a square tower with a pyramidal spire in receding stages of encircling columns, all unified by a clever use of inverted consoles.

S. Bride, Fleet Street (A.D. 1680) (pp. 727 C, 732, 735), has a similar though less successful steeple, in which the absence of the inverted consoles gives a telescopic effect to the series of columned stages.

S. Martin, Ludgate (A.D. 1684) (pp. 724 D, 724^2 B, 727 D), has an interior with four Corinthian columns to the central vault, but is best known for its beautiful little steeple, consisting of a square tower connected by side scrolls to the façade and surmounted by an octagonal stage with timber spire and weather vane, all grouping well with views of S. Paul's Cathedral.

S. Clement Danes, Strand (A.D. 1684), which has a very graceful steeple in diminishing stages (p. 724^2 A) added by Wren in A.D. 1719, and **S. James, Piccadilly** (A.D. 1683) (p. 735), are remarkable for their two-storeyed aisles in which galleries are supported by square piers surmounted by Corinthian columns and a barrel-vaulted roof, intersected by semi-cylindrical vaults at right angles over the gallery bays (p. 735 C).

S. Mary Abchurch (A.D. 1686) (pp. 724 A, 724^2 D), is a square church in a cramped position with the dome on pendentives as the principal feature, while the steeple is neither fine nor well placed; but Wren lavished his decoration on altar-piece, organ case, pulpit, and pews to produce a fine interior, which even appears spacious under its painted dome.

S. Mildred, Bread Street (A.D. 1677–83), is a rectangle in three compartments with central dome on pendentives, and is quite a gem in the perfection of its parts and in the beauty of its carved woodwork.

S. Lawrence Jewry (A.D. 1671–80) (p. 724 B), **S. Benetfink** (A.D. 1673–76) (p. 724 C), now destroyed, **S. Mary-at-Hill** (A.D. 1672–77) (pp. 724 E, 724^2 C), a vaulted and domed church formed into a Greek cross by four columns, **S. Anne and S. Agnes** (A.D. 1681) (p. 724 F), **S. Swithin, Cannon Street** (A.D. 1678) (p. 724 H), **Christ Church, Newgate Street** (A.D. 1687, steeple 1704) (p. 724 J), and **S. Magnus, London Bridge** (A.D. 1676–1705) (p. 724 K), all show Wren's subtle adaptation of plan to site.

S. Alban, Wood Street (A.D. 1685), **S. Dunstan in the East** (A.D. 1698), **S. Mary Aldermary** (A.D. 1711) (p. 728 G), and **S. Michael, Cornhill** (A.D. 1672–1721) (p. 728 J), offer examples of his treatment of Gothic spires.

Willen Church, Buckinghamshire (A.D. 1680), built for Dr. Busby, has an interior reminiscent of Trinity College Chapel, Oxford (p. 730 D).

Wren designed a number of collegiate buildings in Oxford and Cambridge which display his peculiar power of adapting the design to meet the exigencies both of site and purpose. At **Oxford** there is the **Sheldonian Theatre** (A.D. 1664) (p. 728 X), designed after the Theatre of Marcellus with roof on the lines of a velarium, since altered; while the **Library, Queen's College** (A.D. 1682) (p. 744² B), the **Inner Court and Chapel, Trinity College** (A.D. 1665) (p. 730 D), and the **Tom Tower, Christ Church** (A.D. 1682) (p. 728 S), exhibit Wren's mastery in design. The **Old Ashmolean Museum** (A.D. 1677) was designed by T. Wood under Wren's influence. At **Cambridge** there are **Pembroke College Chapel** (A.D. 1663) (p. 719), **Emmanuel College Chapel** (A.D. 1668–77), and **Trinity College Library** (A.D. 1679) (pp. 728 Z, 730 C). The **School Room, Winchester** (A.D. 1684), links the name of Wren with that of the cathedral builder, William of Wykeham.

Among Wren's secular works are the **Monument, London** (A.D. 1671) (p. 728 H), to commemorate the Great Fire; the Fountain Court and garden façades (A.D. 1690) of **Hampton Court Palace** (pp. 377 B, 727 U), which have been described in connection with the Tudor portion of Henry VIII (p. 380); two blocks of **Greenwich Hospital** (A.D. 1696–1705) (pp. 716, 717, 727 E); **Chelsea Hospital** (A.D. 1682–92) (p. 728 F); **Temple Bar, London** (A.D. 1672) (p. 728 W) (now at Theobald's Park, Herts); **Marlborough House**, Pall Mall (A.D. 1710); and the **Banqueting Hall** (Orangery) and additions to Kensington Palace (A.D. 1690–1704). The **Temple, London** (A.D. 1674–84), with its simple brick façades and carved doorways, also shows Wren's versatility in adapting design to purpose.

Winchester (Royal) **Palace** (A.D. 1683), now used as barracks, was designed by Wren; while **Wolvesey Palace, Winchester** (p. 762 H), rebuilt (A.D. 1684) under his influence, has been since mostly pulled down.

Morden College, Blackheath (A.D. 1695) (pp. 737 K, 747 A), bears witness to the spirit of benevolence of the age, and is planned with rooms for forty pensioners. Its red brickwork, stone quoins, and sash windows contrast with its columned entrance over which are the statues of the founder and his wife, and a useful clock-turret. The courtyard, surrounded by its effective and reposeful façade and colonnade providing a covered access to the different rooms, completes this interesting building.

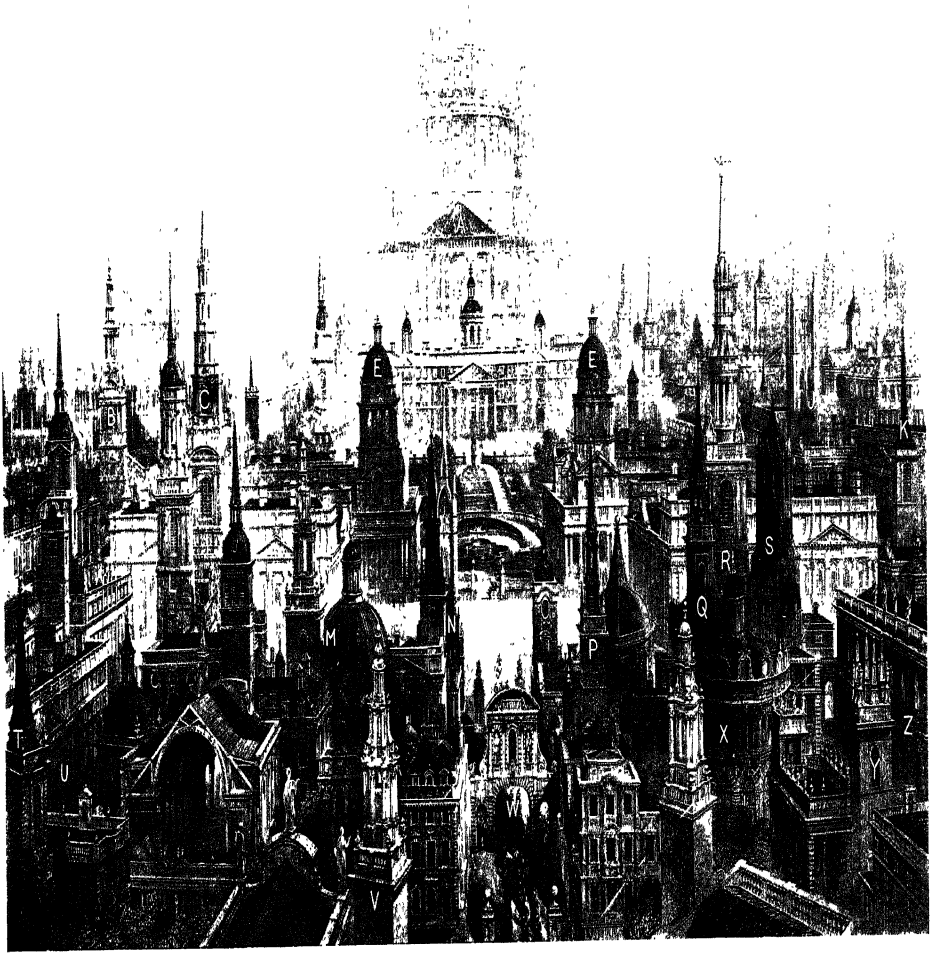
Abingdon Town Hall (A.D. 1677) (p. 747 F), with its open market and assembly-room over, is a bold design with pilasters including two storeys, and owes much to the influence of Sir Christopher Wren.

Guildford Town Hall (A.D. 1683) (p. 762 C) is a bold and picturesque building of this period, with its carved brackets supporting the overhanging storey, large windows separated by pilasters, consoled cornice, hexagonal turret and projecting clock with wrought-iron stays, and shows the influence of Wren.

Windsor Town Hall (A.D. 1688) is also by Wren, and **Rochester Guildhall** (A.D. 1687) is by Wren or one of his pupils.

Wren's facile genius also found scope in designs for country houses for the nobility, and for houses in country towns for the prosperous middle classes, now firmly established in the social life of England.

Belton House, Grantham (A.D. 1689) (pp. 736 B, 737 B, 741 C), is one of Wren's houses of the H type of plan (p. 737 B), with central steps leading to the hall and rooms on the principal floor. There is a main staircase to the right of the hall, and in each wing service stairs from the kitchen

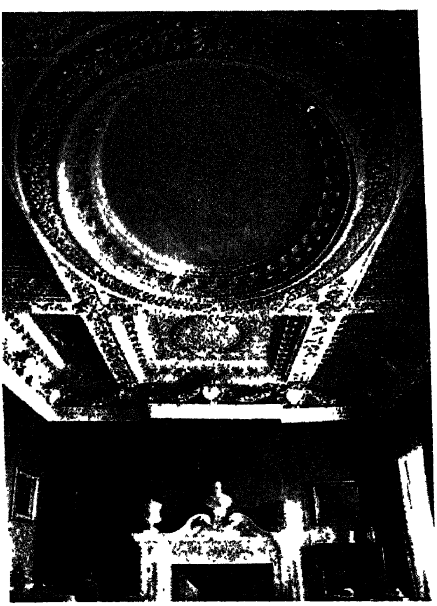


PRINCIPAL BUILDINGS OF SIR CHRISTOPHER WREN AS DRAWN BY PROFESSOR COCKERELL

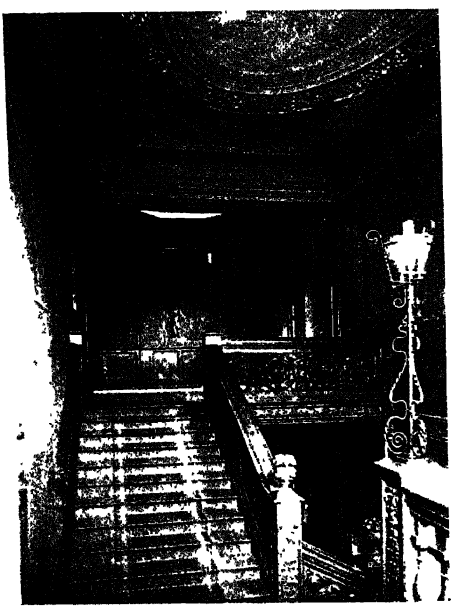
A. S. Paul's Cathedral
B. Christ Ch., Newgate St.
C. S. Bride, Fleet Street
D. S. Martin, Ludgate
E. Greenwich Hospital
F. Winchester Palace
G. S. Mary Aldermary
H. The Monument, London
J. S. Michael, Cornhill
K. S. Margaret, Lothbury
L. S. Magnus, London Bridge
M. S. Stephen, Walbrook
N. S. Dunstan in the East
P. S. Augustine, Watling St.
Q. S. Edmund, Lombard St.
R. S. Mary-le-Bow, Cheapside
S. Tom Tower, Oxford
T. S. Nicholas Cole Abbey
U. Hampton Court Palace
V. S. Michael Paternoster Royal
W. Temple Bar
X. Sheldonian Theatre, Oxford
Y. S. Mary Somerset (Tower)
Z. Library, Trinity College, Cambridge



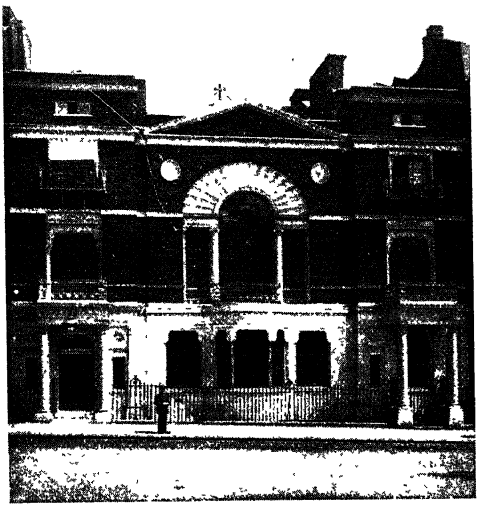
A. HONINGTON HALL, WARWICKSHIRE



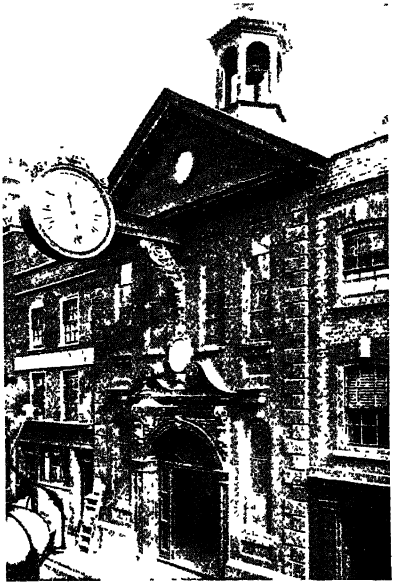
B. COLESHILL, BERKSHIRE: SALOON CEILING



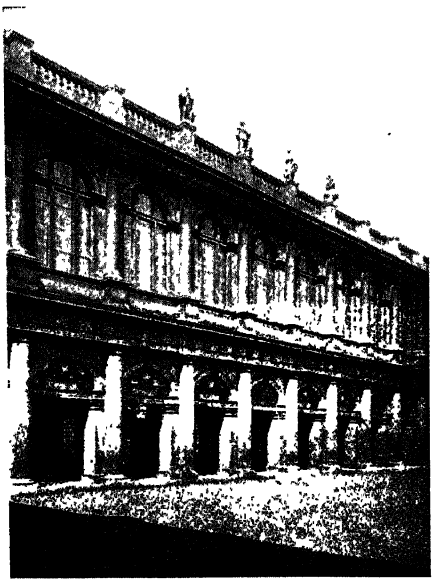
C. ELTHAM HOUSE, KENT THE STAIRCASE



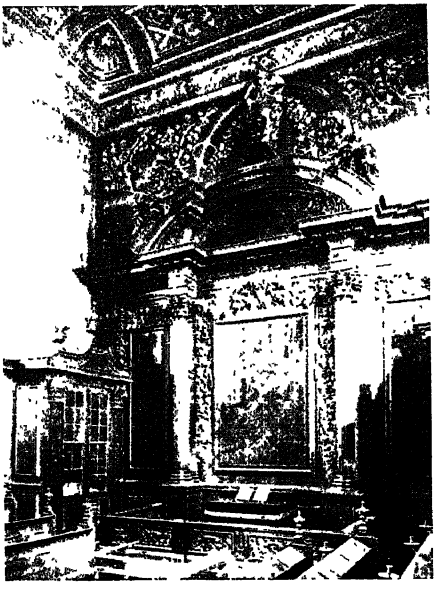
A. Boodle's Club, London



B. Corn Exchange, Rochester



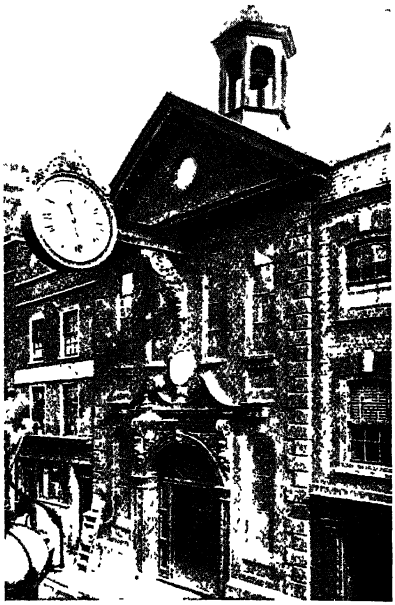
C. Trinity College Library, Cambridge



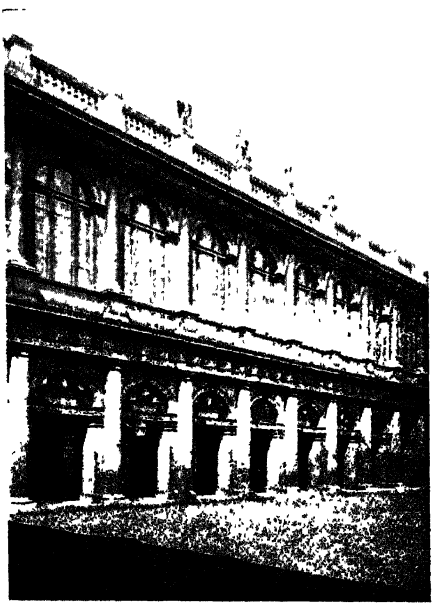
D. Trinity College Chapel, Oxford



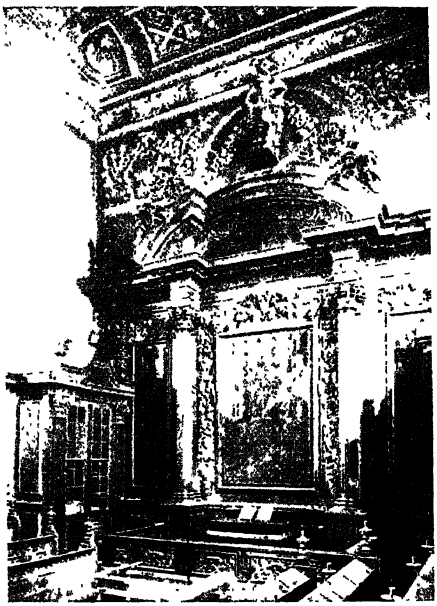
A. Boodle's Club, London



B. Corn Exchange, Rochester

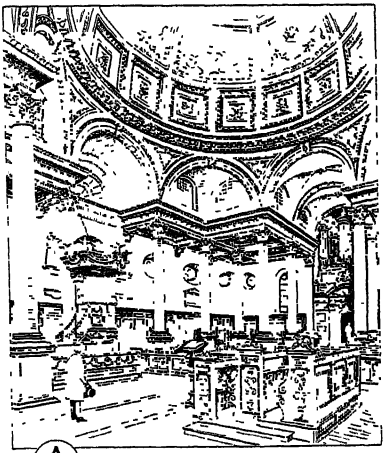


C. Trinity College Library, Cambridge

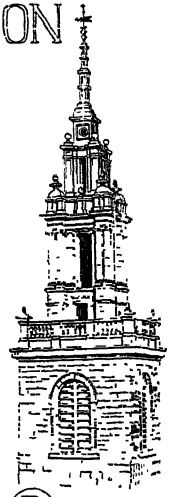


D. Trinity College Chapel, Oxford

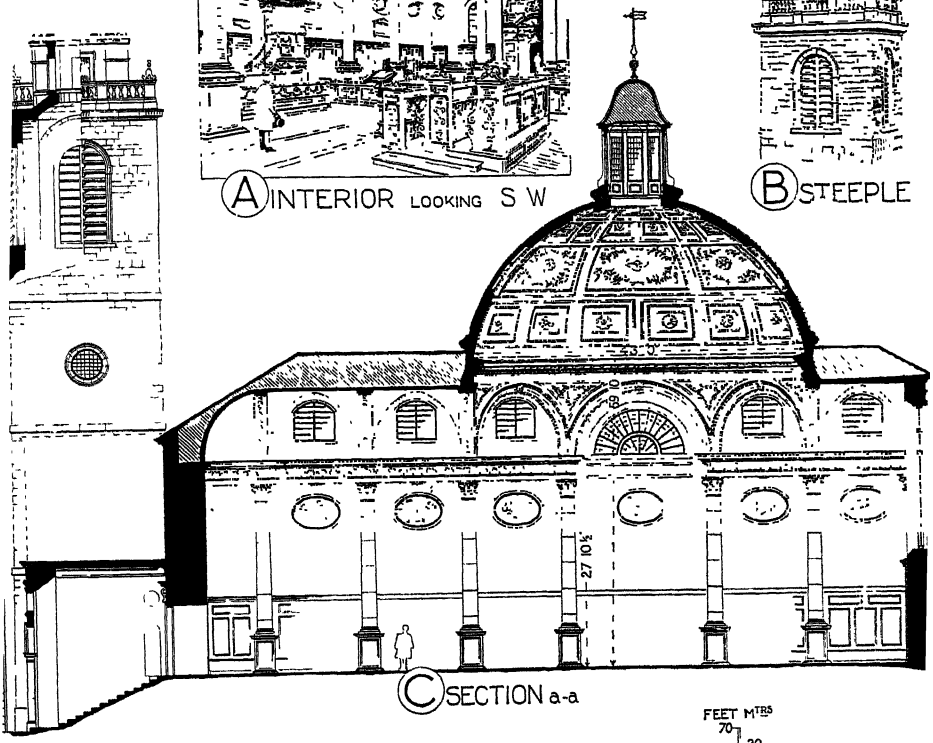
S. STEPHEN, WALBROOK: LONDON



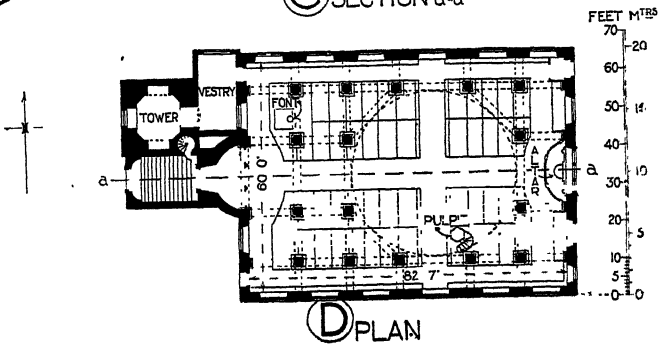
A INTERIOR LOOKING S W



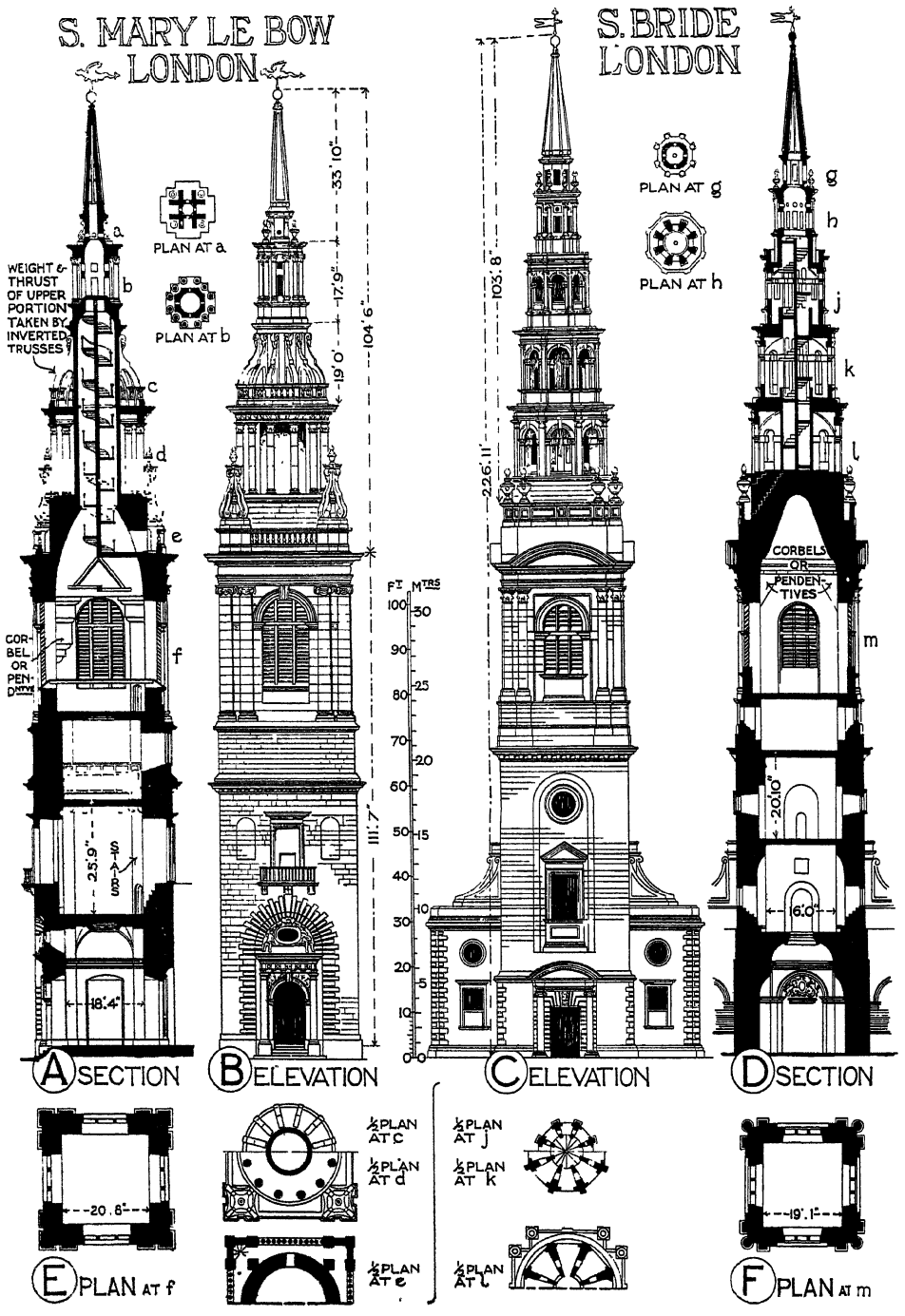
B STEEPLE



C SECTION a-a



D PLAN


S. MARY LE BOW
LONDON
S. BRIDE
LONDON
PLAN AT a
PLAN AT b
PLAN AT g
PLAN AT h
WEIGHT & THRUST OF UPPER PORTION TAKEN BY INVERTED TRUSSES
CORBEL OR PENDATIVE
CORBELS OR PENDENTIVES
33'10"
17'9"
19'0"
104'6"
111'7"
103'8"
226'11"
25'9"
18'4"
20'10"
6'0"
FT
MTRS
SAMPLE
A SECTION
B ELEVATION
C ELEVATION
D SECTION
½PLAN AT c
½PLAN AT d
½PLAN AT e
½PLAN AT j
½PLAN AT k
½PLAN AT l
20'8"
19'1"
E PLAN AT f
F PLAN AT m

in the basement. The exterior (p. 736 B) has a slightly projecting centre surmounted by a pediment and has hipped roofs, dormers, belvedere, and central turret. The dining-room (p. 741 C) has decorative treatment of the late Renaissance, with walls panelled from floor to ceiling, doors with large panels and pediments, and chimney-piece with bold mouldings and cornice surmounted by a frame of elaborately carved birds, fruit, and flowers by Grinling Gibbons, while the plaster ceiling has a geometrical design with richly modelled mouldings.

Groombridge Place, Kent (pp. 736 A, 737 F), is generally regarded as one of Wren's works. The plan is of the H type, reminiscent of that of a Jacobean mansion, but the central hall has no screen or daïs, and is a thoroughfare room. The house, reached by a bridge across the moat (p. 736 A), is of red brick with sash windows, divided by stout bars, with Ionic portico, hipped roofs, dormers, and tower-like chimney-stacks.

Honington Hall, Warwickshire (A.D. 1680) (p. 729 A), with later additions, **Melton Constable, Norfolk** (A.D. 1687), and the **House in West Street, Chichester** (A.D. 1696), are examples of houses ascribed to Wren, in all of which staircases, chimney-pieces, wall panelling, and ceilings show how he applied late Renaissance motifs to the fittings of the English home, while the **Master's House in the Temple, London** (A.D. 1764), is a delightful example of domestic architecture, following Wren's tradition.

Eltham House, Kent (A.D. 1664) (pp. 729 C, 737 E), now the Golf Club, was designed by Hugh May, Paymaster (Surveyor) to the King's Works. He carried out other buildings at Windsor Castle, Cornbury (Oxfordshire), and Cassiobury, and also was a Commissioner for the repair of S. Paul, London, and carried on the same traditions as Sir Christopher Wren.

LATE RENAISSANCE

B. GEORGIAN (A.D. 1702–1830)

GEORGIAN HOUSES

It has already been stated that the character of Renaissance architecture depended largely on the personal whim and fancy of the architects (p. 542), but by this period domestic architecture had become fairly standardised in treatment. The essential element in domestic building is to capture the spirit of rest and express it in the house design and appointments. In achieving this purpose, Wren and his disciples were, though perhaps unconsciously, as resourceful as in their more ambitious designs for public buildings. It only remains to describe some of the more important buildings of this period. The demand for houses for the middle classes and for mansions for the aristocracy had, as we have seen, opened a new field of design, even in the time of Inigo Jones and Wren (pp. 716, 726), and in the eighteenth century large numbers of houses were built, and these were of two types.

(*a*) ***The simple block plan.***—This type of plan was very generally employed, both in town and country, for eighteenth-century houses, in which the hall and staircase occupy the centre, while the rooms are compactly disposed on either side. It was developed from the square block as in **Coleshill** (p. 737 C), the **Queen's House, Greenwich** (p. 717 E), and **Thorpe Hall** (p. 737 M), or from the oblong block, as at **Chevening** (p. 737 H). The **Moot House, Downton** (A.D. 1650, remodelled 1720) (p. 744[1] B), has walls of brick, stone quoins, pedimented central feature, sash windows, and wooden cornice, and is crowned with a hipped roof. The **Great House, Burford** ; the **Castle House,**

Buckingham ; Eagle House, Mitcham ; Fenton House, Hampstead (p. 737 D), and the **House in the Close, Salisbury** (A.D. 1701) (pp. 737 A, 762 B, L), are representative Georgian houses. **Swan House, Chichester** (p. 738 A), by some attributed to Wren, has all the familiar characteristics of Georgian houses, which were built for the middle classes, with a basement for kitchen, stores, and servants' quarters. These houses have brick or stone walling, symmetrically disposed sash windows, columned doorways, bold crowning cornices, hipped and dormered roofs, and big chimney-stacks. The comfort of the interior goes hand in hand with the symmetrical exterior, and panelled walls, plaster ceilings, carved chimney-pieces, and staircases, set off by the beautiful furniture of Chippendale, Sheraton, and the brothers Adam, complete these typical English homes (pp. 729, 741, 769). Every old provincial town furnishes examples of these quiet and dignified houses, often now occupied by local professional men. Both in external symmetry and internal comfort they represent the spirit of an orderly and prosperous community desiring no parade of riches, but intent on comfortable home surroundings.

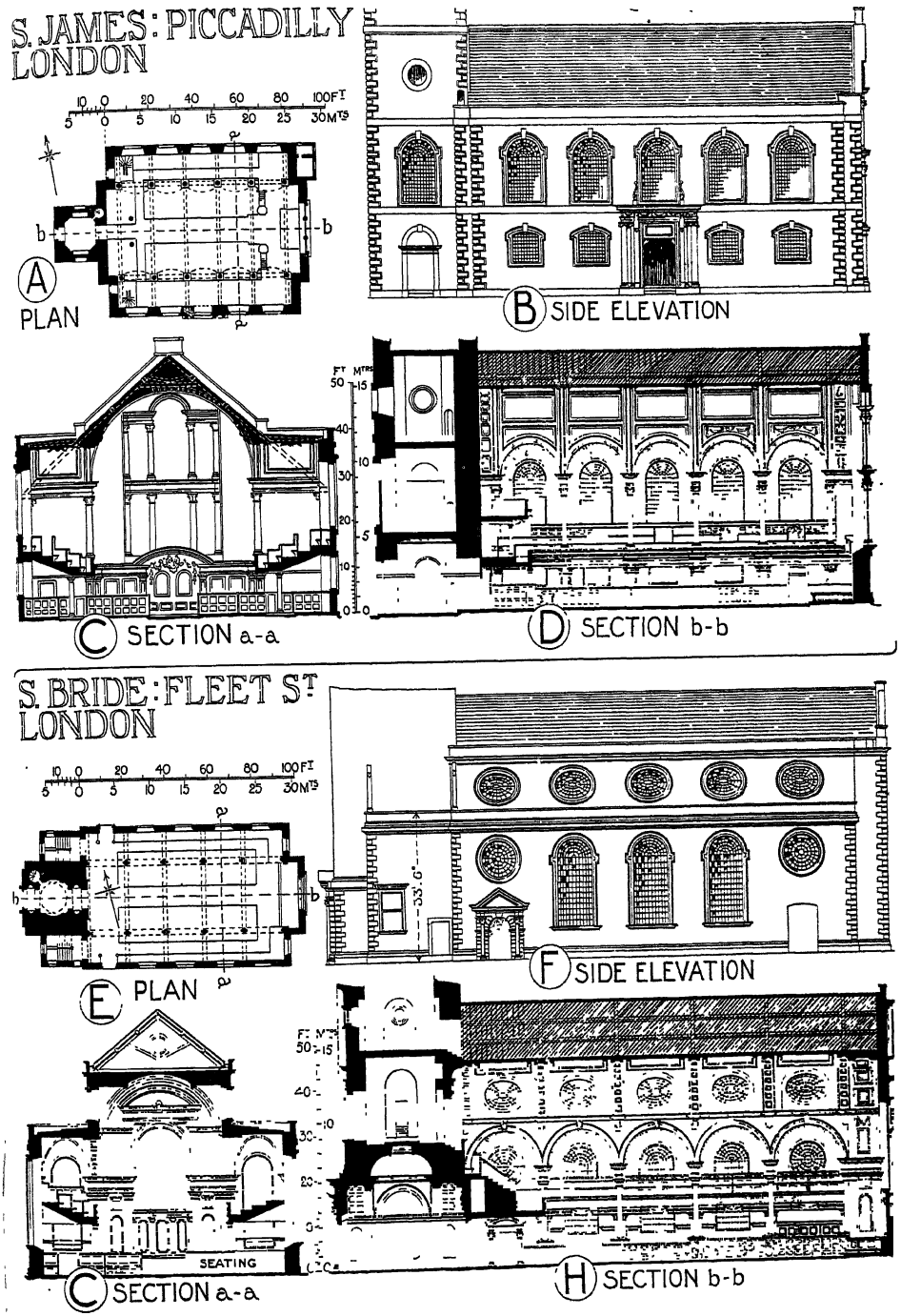
The **Palladian Villa, Chiswick** (A.D. 1729) (p. 744[1] A), designed by Kent and the Earl of Burlington, although a simple block in plan, is a modified copy of the Villa Capra, Vicenza (p. 599), with a windowless central hall unsuitable to the English climate, and, with its commanding portico reached by imposing flights of steps, is typical of the " pediment and portico style " of the eighteenth century.

Mereworth Castle, Kent (A.D. 1723) (p. 737 G), by Colin Campbell, is also founded on the Villa Capra, Vicenza, and possesses all the defects of the Villa at Chiswick for its purpose as an English country house.

(*b*) ***The central block with wings.***—This type of plan superseded the E- and H-shaped plans of the previous period, as most suitable for great mansions. The central block has a basement storey, not necessarily below ground, often containing kitchen and domestic offices. The principal floor, with its columned portico, reached by imposing external steps, was devoted to the hall, grand staircase, saloon, and reception rooms, which were usually of noble proportions. As a portico surmounted by a pediment was considered necessary by the owners, the nickname of " pediment and portico style " has been given to this type of house. On either side colonnades, sometimes quadrant in form, connected the central block to the wings, which sometimes contained the chapel, library, kitchens, and stables. All the component parts, whether central block, pedimented portico, wings, or colonnades, were designed to give scale and dignity expressing the greatness of England's noble families. This type of plan was on the model of Stoke Park, Northants, by Inigo Jones (p. 716).

Castle Howard, Yorkshire (A.D. 1702–14) (p. 742), by Sir John Vanbrugh and Nicholas Hawksmoor, is a stately palace (p. 742 A), possessing many of the general features already alluded to, with a total length of 660 ft. The plan (p. 742 B) shows a central block, with north entrance to the great hall, 34 ft. square, which is crowned by a dome and flanked by staircases. The saloon beyond, on the central axis, faces the garden, and on either side are the principal rooms. Curved arcades connect the main building with the stable court on the west and the kitchen court on the east. The hall (p. 742 C, D) forms a stately vestibule, with its Composite Order, statues in niches, and arched openings admitting light from the central dome to the main staircase.

Blenheim Palace, Oxfordshire (A.D. 1705) (p. 745), by Sir John Vanbrugh, is the most monumental mansion in England, and was given by the nation to


S. JAMES: PICCADILLY
LONDON
10 0 20 40 60 80 100FT
5 0 5 10 15 20 25 30MTS
a
b
b
a
A
PLAN
B SIDE ELEVATION
FT MTS
50 15
40
30 10
20 5
10
0 0
C SECTION a-a
D SECTION b-b
S. BRIDE: FLEET ST
LONDON
10 0 20 40 60 80 100FT
5 0 5 10 15 20 25 30MTS
a
b
b
a
E PLAN
F SIDE ELEVATION
FT MTS
50 15
40
30 10
20
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SEATING
C SECTION a-a
H SECTION b-b



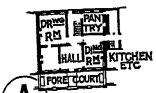
A. Groombridge Place, Kent



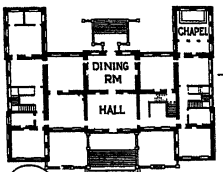
B. Belton House, Lincs

LATE RENAISSANCE PLANS

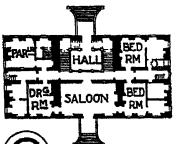
(STUART & GEORGIAN)



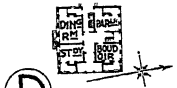
A HOUSE IN CLOSE SALISBURY



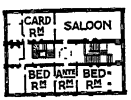
B BELTON HOUSE GRANTHAM



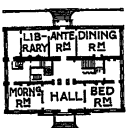
C COLESHILL BERKSHIRE



D FENTON HOUSE: HAMPSTEAD

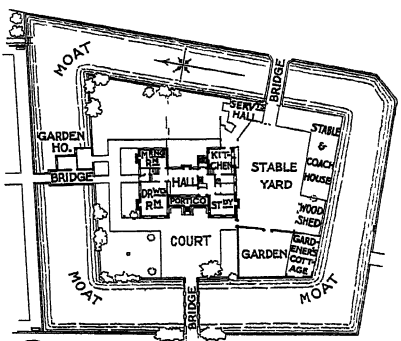


FIRST FLOOR PLAN

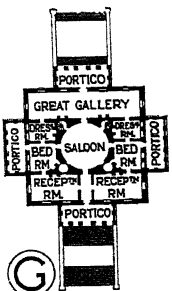


GROUND FLOOR PLAN

E ELTHAM HOUSE: KENT



F GROOMBRIDGE PLACE: KENT



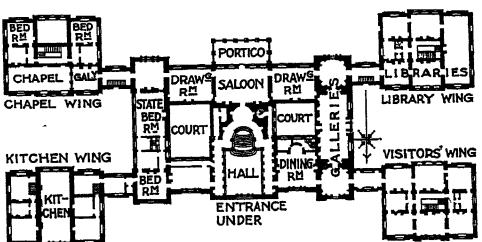
G MEREWORTH CASTLE: KENT



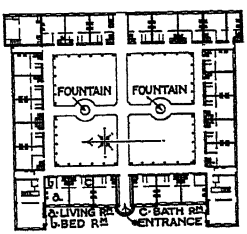
FIRST FLOOR PLAN



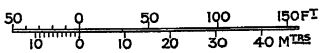
H CHEVEN-ING PLACE: KENT



J HOLKHAM HALL: NORFOLK



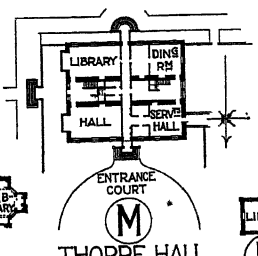
K MORDEN COLLEGE BLACKHEATH



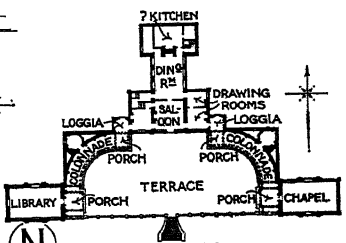
SCALE FOR ALL PLANS



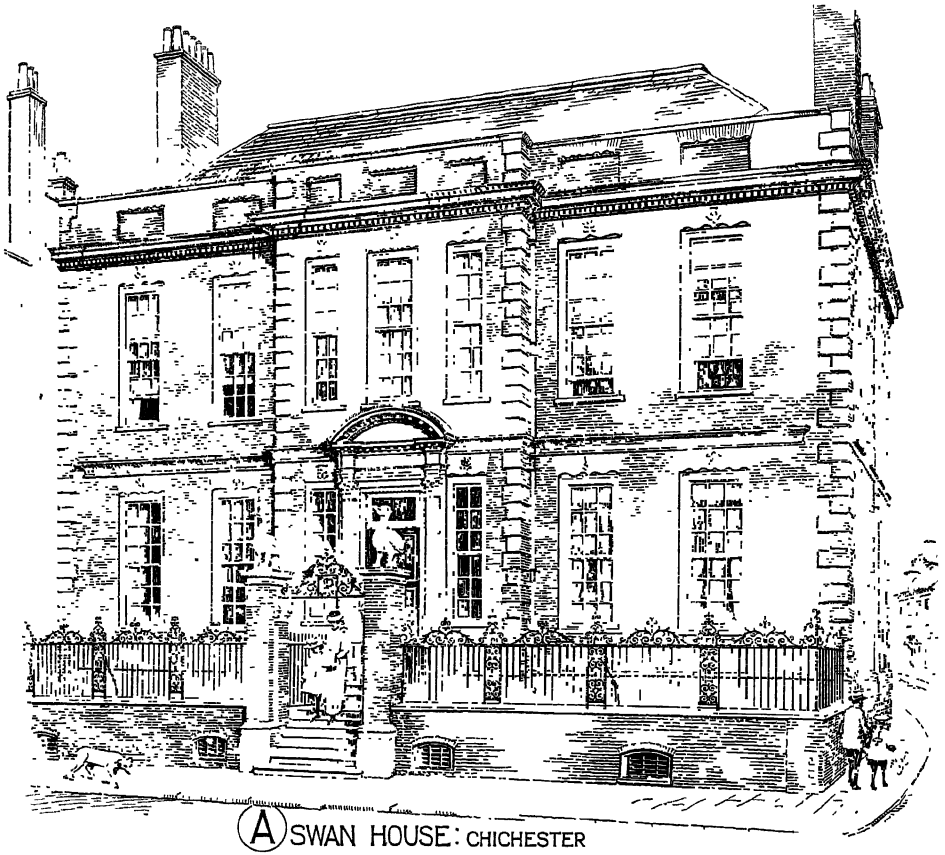
L BUCKLAND: BERKS



M THORPE HALL NORTHANTS



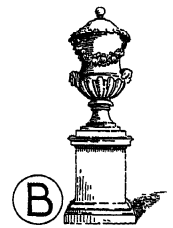
N STOKE PARK: NORTHANTS



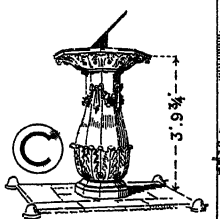
A SWAN HOUSE: CHICHESTER



D DOORWAYS
LAURENCE POUNTNEY HILL: LOND.



B STONE VASE
WREST PARK: BEDS.



C SUNDIAL: WREST: BEDS



E DOORWAY
RAYNHAM HALL: NORFOLK

the first Duke of Marlborough. The plan (p. 745 B) (850 ft. long) is designed on axial lines in which symmetry rather than convenience is aimed at. A bold entrance gate led to a great court, three acres in extent, beyond which is the central block, with hall, saloon, internal courts for light, and corridors, which are here extensively used, while on the west is the great gallery, 180 ft. by 22 ft., reminiscent of the Elizabethan long gallery. Right and left on the entrance façade are quadrants and colonnades which connect the main building to the kitchen and stable courts. The great hall (p. 745 C), 70 ft. long by 45 ft. wide and 67 ft. high, forms a worthy approach to the saloon and state apartments. The exterior (p. 745 A) shows the symmetrical lay-out, with the centre block and its imposing Corinthian portico embracing two storeys, flanked by quadrants, and there are four angle turrets to the main structure. The garden façade (p. 745 D), 320 ft. long, has a more delicate treatment than the ponderous but imposing entrance façade, satirised by Pope in his reference to Vanbrugh:

> " Lie heavy on him, earth, for he
> Laid many a heavy load on thee."

Kedleston Hall, Derbyshire (A.D. 1761–65) (p. 746), designed by Brettingham and Paine, was carried out by Robert Adam. The plan (p. 746 D) consists of a central block, 135 ft. by 105 ft., having on the principal floor the great hall, 66 ft. by 51 ft., and saloon on the central axis, with drawing-room, library, music-room, dining-room, and other apartments on either side. Quadrant corridors connect the main building with the kitchen and private wings, and the original design included two similar wings on the south. The hall (p. 746 C, E) is a most imposing apartment, being the whole height of the mansion and having the appearance of an ancient basilica, with colonnades of alabaster Corinthian columns, 25 ft. high, surmounted by a coved ceiling in the Adam style, while the walls have statue niches. The general lay-out (p. 746 A) shows the usual basement storey, the external steps to the principal floor, with its fine central Corinthian portico, and on either side are the wings, which, being lower, give scale and importance to the central block. The south front (p. 746 B) is treated in a lighter vein with curved steps to the garden.

Buckland House, Berks (A.D. 1757-71) (p. 737 L), by John Wood, Junior, has a central block on the model of Prior Park, Bath, with corridors right and left leading to the octagonal chapel and library.

Other examples of this type of mansion are: **Latham Hall, Lancashire** (A.D. early eighteenth century), by Leoni; **Houghton Hall, Norfolk** (A.D. 1723), by Colin Campbell; **Moor Park, Herts** (A.D. 1720), by Leoni; **Seaton Delaval, Northumberland** (A.D. 1720), by Sir John Vanbrugh; **Holkham Hall, Norfolk** (A.D. 1734) (p. 737 J), by William Kent; **Prior Park, Bath** (A.D. 1735–43), by John Wood; **Sion House, Isleworth** (A.D. 1761), and **Kenwood House, Hampstead** (A.D. 1764), the two last by the Brothers Adam. **Stowe House, Buckingham** (A.D. 1697), was altered by Robert Adam and others (A.D. 1775), and is now a school, the garden houses and temples being by Vanbrugh. **Harewood House, Yorkshire** (A.D. 1760), by " Carr of York " (A.D. 1723–1807), with additions by Robert Adam and Sir Charles Barry, is a mansion with wings extending in a straight line on either side of the central block; while **Chatsworth House, Derbyshire** (A.D. 1681), by William Talman, is a ducal palace famous for its priceless treasures of art and literature and for the gardens laid out by Paxton.

The **Garden House, Poundisford Park** (c. A.D. 1675) (p. 747 C), near

Taunton, Somerset, is a simple yet pleasing example of garden architecture, such as is to be found in many a country seat of the period.

GEORGIAN TOWN HOUSES

Many mansions were erected in London, but restrictions of site did not usually permit of the extended treatment adopted for the country, though William Kent, in **Devonshire House, Piccadilly** (A.D. 1734), made a fine use of this central town site, now unfortunately demolished to serve other purposes, Other great London houses of this period are **Chesterfield House** (A.D. 1766), by Isaac Ware ; the "**Mansion House**" (A.D. 1739–53), by George Dance, Senior ; **Lansdowne House** (A.D. 1765) and **Apsley House, Piccadilly** (A.D. 1785), by the Brothers Adam (portico added to the latter A.D. 1828), and **Carlton House** (A.D. 1788) (since destroyed), on the site of the present Waterloo Place, by Henry Holland, who is also responsible for **Dover House, Whitehall** (A.D. 1786). **Ely House, Dover Street, London** (A.D. 1772), by Sir Robert Taylor, has a typical rusticated street façade.

GEORGIAN CHURCHES

A number of important churches belong to this period, designed, as by Wren, whose influence was paramount, with central space and surrounding galleries, suitable for the preaching requirements of the Protestant faith.

S. Mary-le-Strand, London (A.D. 1714–27) (p. 748 C), by James Gibbs, was one of the fifty London churches authorised to be built in the reign of Queen Anne, but of which only ten were completed. On an island site in the Strand, it stands conspicuous, and is notable for its fine general proportions, with façades of superimposed Ionic and Corinthian Orders, a semicircular portico and storeyed western steeple, oblong on plan.

S. Martin in the Fields, London (A.D. 1722), is on a similar design by James Gibbs, with great Corinthian portico and western steeple as its principal features.

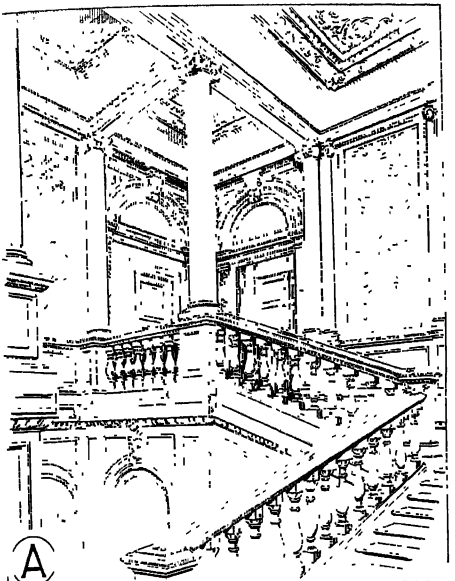
S. Philip, Birmingham (A.D. 1711–19), now the Cathedral, **S. John, Westminster** (A.D. 1728), with its four angle turrets, and **S. Paul, Deptford** (A.D. 1730), are by Thomas Archer, a pupil of Vanbrugh.

S. Mary Woolnoth, London (A.D. 1713–19) (p. 748 D), by Nicholas Hawksmoor, a pupil of Wren, is remarkable for its fortress-like rusticated façade and curious oblong tower with Composite columns surmounted by two low turrets.

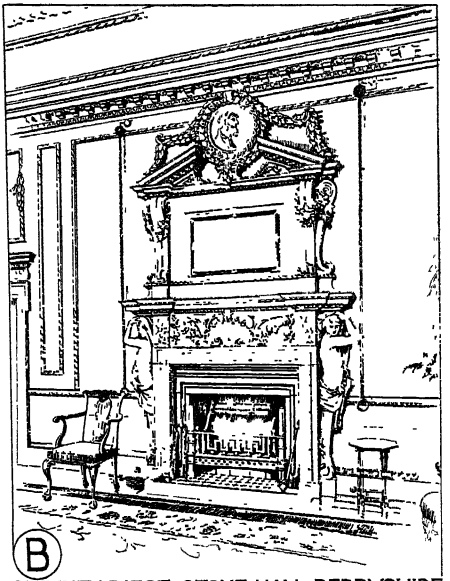
Christ Church, Spitalfields (A.D. 1725), with its lofty and unusual western steeple, and **S. George, Bloomsbury** (A.D. 1720–30), with a pyramidal spire based on the Mausoleum at Halicarnassos (p. 117), surmounted by a statue of King George II, both show the originality of Nicholas Hawksmoor.

S. George, Hanover Square, London (A.D. 1713), by John James, a pupil of Gibbs, is a ponderous edifice whose Corinthian portico, 70 ft. long, serves as a shelter in connection with the numerous weddings solemnised within ; while here for the first time is found a steeple rising from the roof, and without apparent support from the ground. **S. Alphege, Greenwich** (A.D. 1711), is a strong masterly design, generally attributed to Hawksmoor.

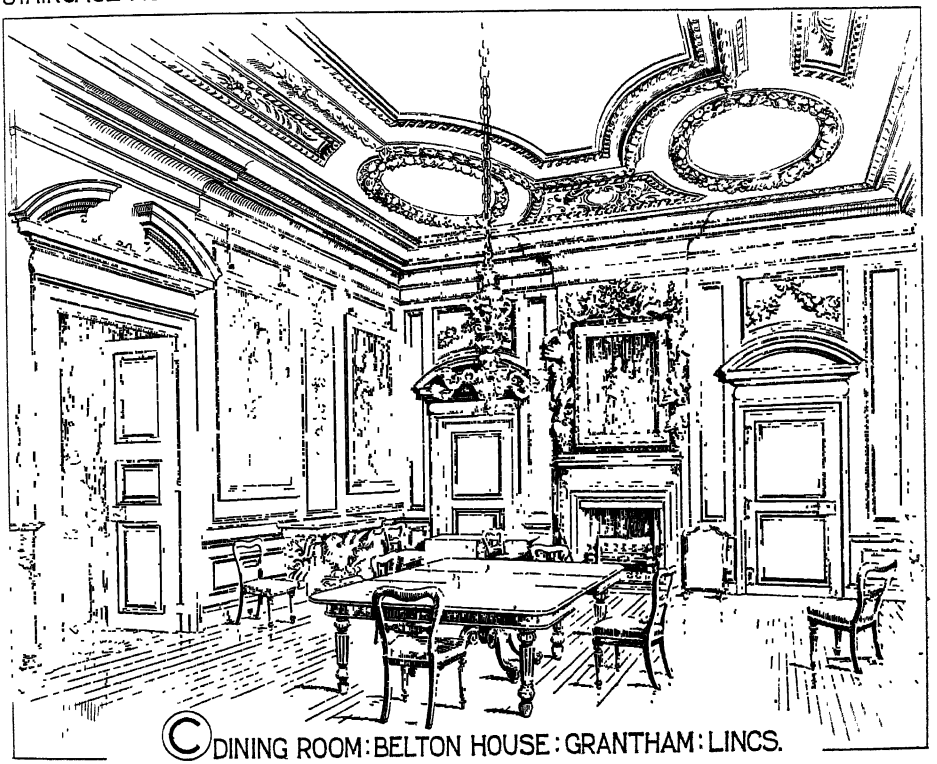
S. George in the East (A.D. 1715) and **S. Anne, Limehouse** (A.D. 1712–24), by Hawksmoor, and **S. Giles in the Fields** (A.D. 1730), by Flitcroft, are other characteristic churches of the period.



A STAIRCASE: ASHBURNHAM HOUSE: LOND.

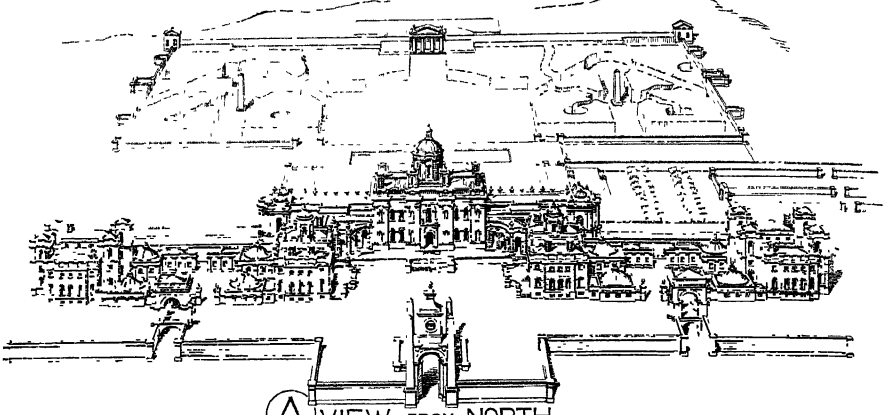


B CHIMNEY PIECE: STOKE HALL: DERBYSHIRE

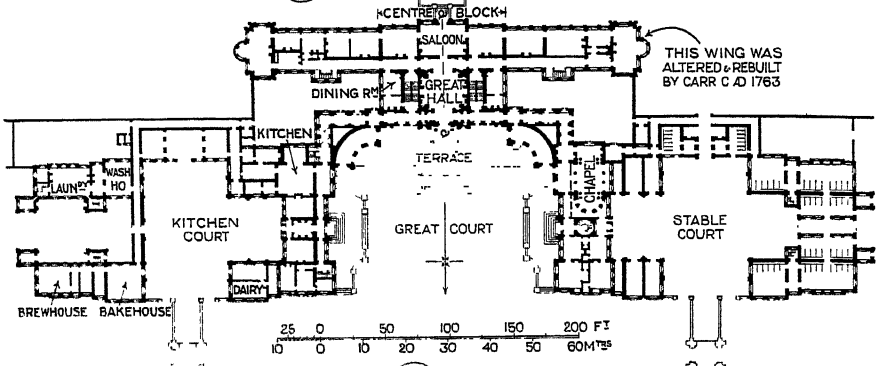


C DINING ROOM: BELTON HOUSE: GRANTHAM: LINCS.

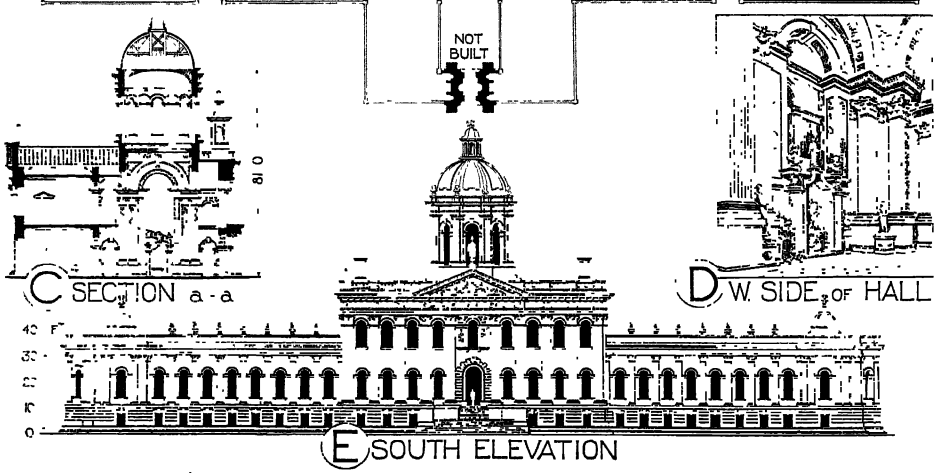
CASTLE HOWARD : YORKSHIRE



A VIEW FROM NORTH



B PLAN



C SECTION a-a

D W. SIDE OF HALL

E SOUTH ELEVATION

GEORGIAN PUBLIC BUILDINGS

Civic, social, government, and collegiate requirements had all to be provided for during this period. **Town Halls** arose, as at Liverpool (A.D. 1754), by John Wood of Bath, and at Monmouth (p. 747 E), a well-balanced building of the eighteenth century; **Corn Exchanges**, as at Rochester (A.D. 1756) (p. 730 B); **Law Courts**, as the "Four Courts," Dublin (A.D. 1786–1800), by Cooley and Gandon, damaged A.D. 1922; **Custom Houses**, as in London (A.D. 1813), by David Laing and Sir Robert Smirke, and in Dublin (A.D. 1781, recently destroyed) by James Gandon; **Prisons**, such as Newgate (A.D. 1770–82, now demolished) by George Dance, Junior; **Hospitals**, such as S. Bartholomew's (A.D. 1730, gateway A.D. 1702) by James Gibbs, S. Luke's Hospital (A.D. 1782) by George Dance, Junior, and additions to Greenwich Hospital (A.D. 1705–15) (p. 716) by Hawksmoor; and many **Banks** were erected throughout the country.

The **Bank of England, London** (A.D. 1795–1827), by Sir John Soane, is unique by reason of its windowless façades in which he employed the Corinthian Order as used for the Temple at Tivoli (p. 146), while he obtained light and shade by columned recesses; but the building had not sufficient height to give it due dignity among its neighbours—a defect which will be remedied when the new structure rising behind the façades is completed by Sir Herbert Baker, A.R.A. (p. 860 B).

The **Pelican Life Office, Lombard Street, London**, designed by Sir Robert Taylor (A.D. 1714–88), is a scholarly example of commercial architecture.

The **Butter Markets**, Barnard Castle (A.D. 1747) (p. 747 B), Bungay (A.D. 1789) (p. 747 D), and Ludlow, are examples of the civic buildings on a smaller scale which abound throughout the country towns, and show the full corporate and commercial life of the period.

Clubs were among the types of buildings of this prolific period and reflect its social life. S. James's Club (A.D. 1764), Boodle's Club (A.D. 1775) (p. 730 A), by Robert Adam, Brooks's Club (A.D. 1777), by Henry Holland, and White's Club (A.D. 1776), by James Wyatt, were among the first of those palatial clubs for which London was to become famous. The Pantheon, London (A.D. 1770), by James Wyatt, once a fashionable meeting-place, has since been altered, and is now a warehouse.

Hospitals and Almshouses still continued to reflect the wishes of the pious founders, as we have seen in **Morden College, Blackheath** (A.D. 1695), by Sir Christopher Wren (p. 726). Many of these buildings date from the seventeenth century, and the later ones appear to have been executed under the influence of Wren. Amongst these may be mentioned Smyth's Almshouses, Maidenhead (A.D. 1659), Colfe's Almshouses, Lewisham (A.D. 1664), Bromley College, Kent (A.D. 1666), Corsham Almshouses (A.D. 1668), **College of Matrons, Salisbury** (A.D. 1682) (p. 744[2] A), and Trinity Almshouses, Mile End (A.D. 1695). Trinity Almshouses, Salisbury (A.D. 1702), Fishmongers' Almshouses, Yarmouth (A.D. 1702), and Somerset Hospital, Petworth (A.D. 1748), are some of those which grace the wayside of our country towns.

Government buildings of the period in London include the Old Admiralty, Whitehall (A.D. 1722–26), by Thomas Ripley, and its enclosing street screen (A.D. 1760), by Robert Adam; the Treasury Buildings (façade to S. James's Park) (A.D. 1734), and Horse Guards (A.D. 1742), by William Kent. The Record Office, Edinburgh (A.D. 1772), is by Robert Adam.

Somerset House, London (A.D. 1776–86) (p. 751 B), by Sir William Chambers, is a grand and dignified building, with a river façade, 600 ft. long, in which rusticated walls carry a Corinthian Order rising through two storeys, pleasingly relieved by colonnades which emphasise the open courts.

Architectural design was not practised only on single and detached buildings. Monumental street architecture was also successfully carried out, as by the Woods at Bath between the years A.D. 1720 and 1780 (p. 704). Unity of design, as applied to street façades, is also well exemplified by the Brothers Adam in Fitzroy Square (A.D. 1790) and the Adelphi, London (A.D. 1768–73).

Collegiate buildings received many important additions, and numerous effective examples of the period are to be seen in the universities.

The **Radcliffe Library, Oxford** (A.D. 1737–47) (p. 748 A), by James Gibbs —probably his finest work—is monumental in character, with a rusticated sixteen-sided ground storey, having alternately pedimented arched openings and niches, while the upper portion is circular, 100 ft. in diameter, with two storeys of windows and niches alternately, included in one Order of coupled Corinthian columns, supporting entablature and balustrade, behind which a high drum with eight buttresses supports the lead-covered dome and lantern.

Queen's College, Oxford (A.D. 1710) (p. 744² B), by Nicholas Hawksmoor, a pupil of Wren, is a fine example of a late Renaissance college with its great quadrangle, hall, chapel, and library, framed in with a dignified Order. The gateway (pp. 744² B, 748 B) is an effective composition with an archway flanked by Tuscan columns and entablature, surmounted by a circular canopy on eight pairs of Doric columns, with entablatures supporting arched drum, cupola and finial, all enclosing a statue of Queen Anne.

The **Senate House, Cambridge** (A.D. 1722–30) (p. 751 A), is an imposing building by James Gibbs. Two storeys are included in a single Order of Corinthian pilasters, coupled at ends, and centre-piece of four half-columns surmounted by a sculptured pediment, flanked by balustrades, while the sash windows of the ground storey are headed by alternately triangular and segmental pediments, the upper windows being round-headed. The whole has a unity of composition and is rich yet reposeful in effect.

Among other important collegiate buildings of this period may be mentioned: At **Oxford** the Radcliffe Observatory (A.D. 1772), by Robert Adam, and the North Quadrangle of All Souls' College (A.D. 1720–35), by Nicholas Hawksmoor, date from this period. At **Cambridge** there are the University Library (A.D. 1754–58) by Stephen Wright, and portions of other colleges. Trinity College, Dublin (A.D. 1752–98), was altered by Sir William Chambers, and Edinburgh University (A.D. 1778) is by Robert Adam.

Bridges of architectural character, as Richmond Bridge (A.D. 1780) and Kew Bridge (A.D. 1782), both designed by James Paine, now joined up the busy districts on either side of the Thames. Waterloo Bridge (A.D. 1811–17), of which Sir John Rennie was engineer, shows the influence of the Greek revival.

4. COMPARATIVE ANALYSIS

(A comparative analysis of essential differences between Gothic and Renaissance Architecture is given on p. 547.)

This Comparative Analysis covers Early Renaissance (Elizabethan and Jacobean periods) and Late Renaissance (Stuart and Georgian).



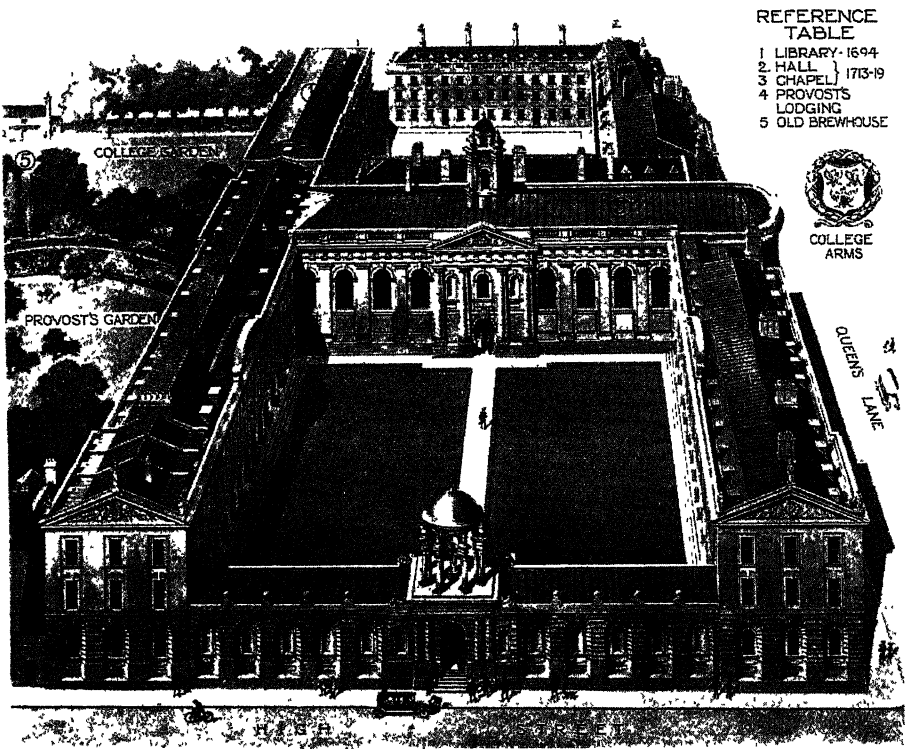
A. The Palladian Villa, Chiswick



B. The Moot House, Downton



A. College of Matrons, Salisbury

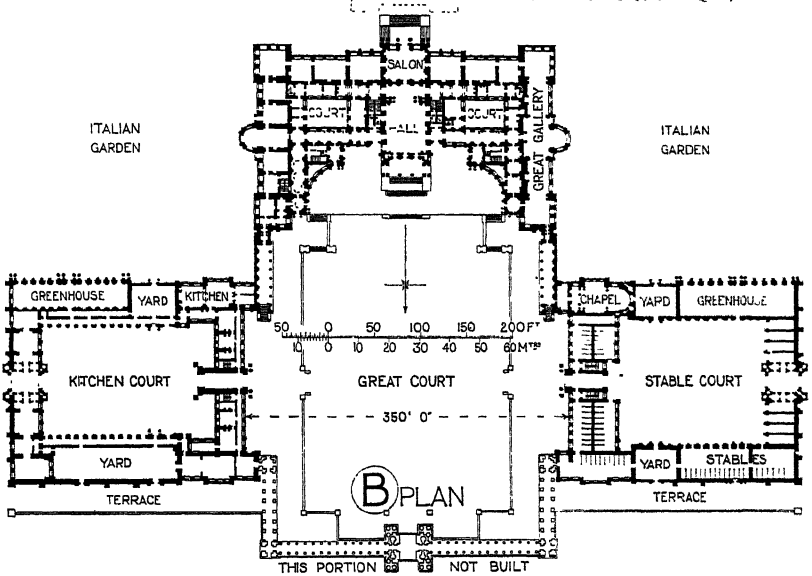


B. Queen's College, Oxford

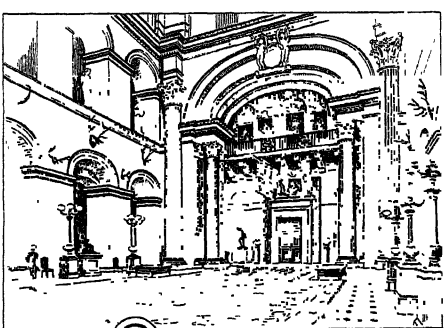
BLENHEIM PALACE : OXON



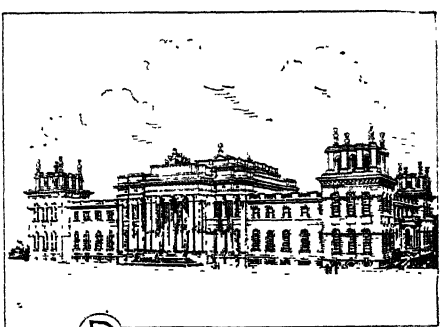
A EXTERIOR FROM N



B PLAN



C GREAT HALL

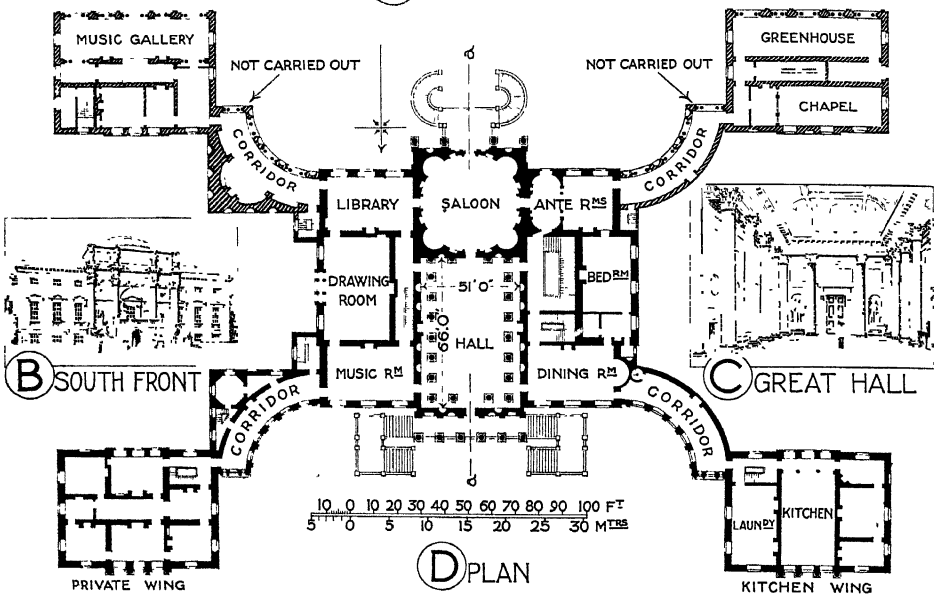


D EXTERIOR FROM S E

KEDLESTON HALL : DERBYSHIRE



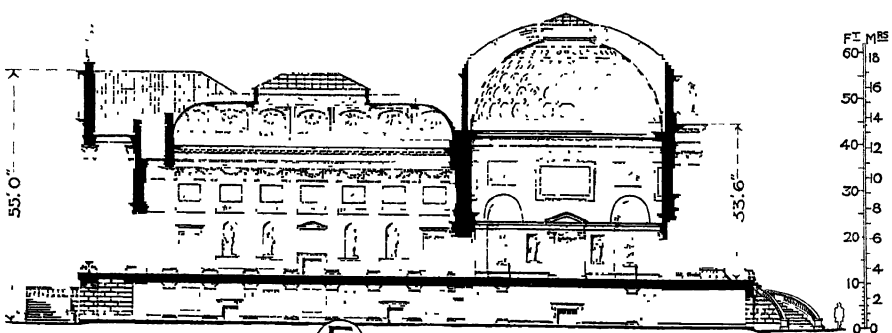
A VIEW FROM N.



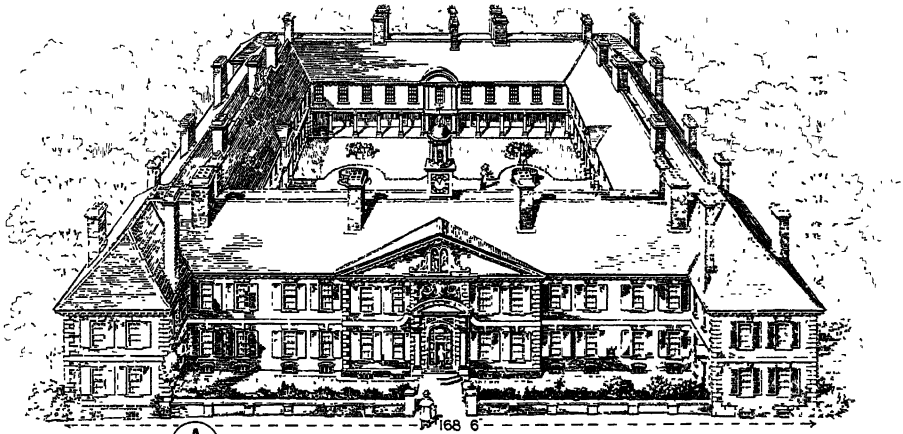
B SOUTH FRONT

C GREAT HALL

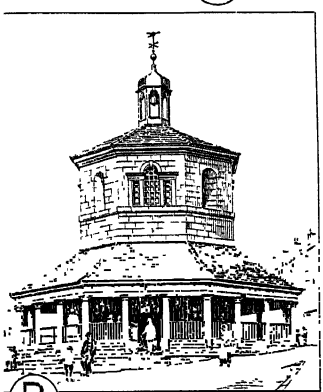
D PLAN



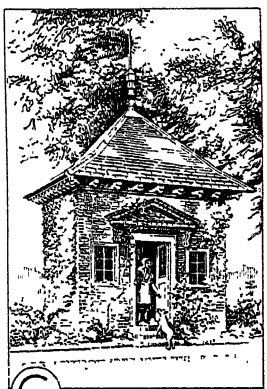
E SECTION a-a



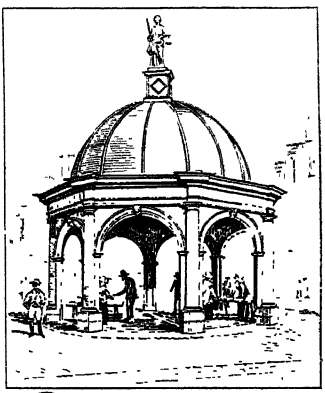
A MORDEN COLLEGE : BLACKHEATH : KENT



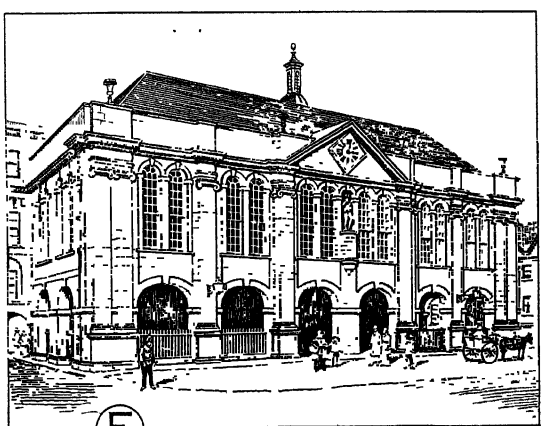
B BUTTER MARKET
BARNARD CASTLE : DURHAM



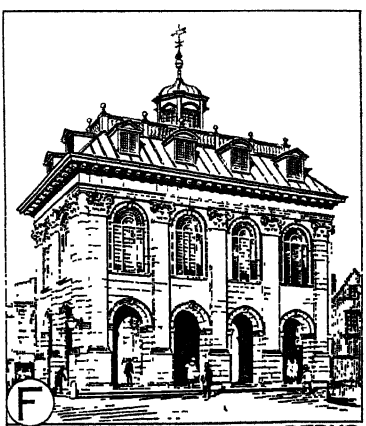
C GARDEN HOUSE
POUNDISFORD PARK : SOM.



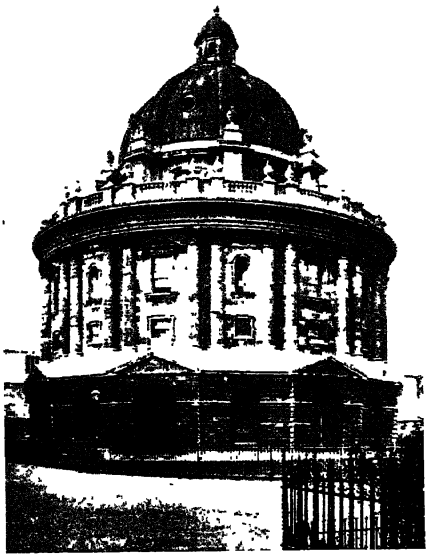
D BUTTER MARKET
BUNGAY : SUFFOLK



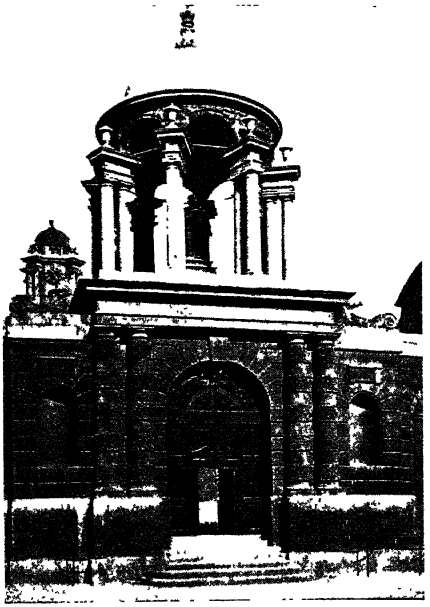
E TOWN HALL : MONMOUTH



F TOWN HALL : ABINGDON : BERKS



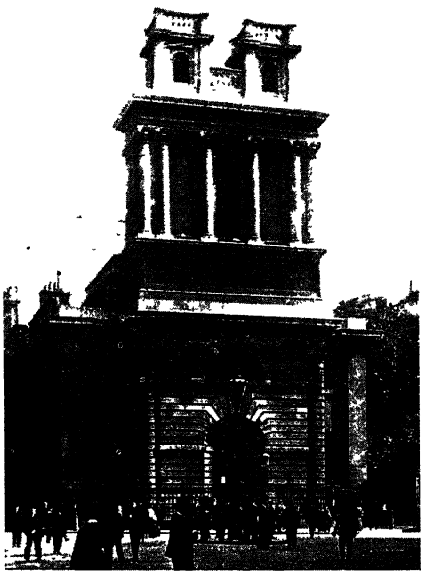
A. Radcliffe Library, Oxford



B. Queen's College Gateway, Oxford



C. S. Mary-le-Strand, London



D. S. Mary Woolnoth, London

A. **Plans.**

Early Renaissance.—House plans are often E- or H-shaped (p. 696) with central entrance and two side wings, as at Montacute (p. 696 B), Bramshill (p. 696 G), Aston Hall (p. 696 H), Hatfield (p. 696 F), and Audley End. Plans are sometimes quadrangular, as at Burghley (p. 696 A), Longleat (p. 696 D), Wollaton (p. 696 C), and Castle Ashby (p. 700 D). Sometimes plans are of a fanciful shape, as at Longford Castle (p. 696 E). Hardwick Hall (p. 700 B) is a rectangular block with large projecting bays. Such buildings as Knole, Penshurst (p. 370 E), and Haddon (p. 370 H) are of irregular plan, and are additions to previous Gothic houses. Internal courts for lighting are sometimes employed, as at Blickling (p. 696 J) and Chastleton House, Oxfordshire. Characteristic features are the great hall (p. 693 A), broad staircase (pp. 693 B, 755 B, C), and long gallery (p. 693 C). Broad terraces with balustrades (p. 752 D, F) raised above the garden level and wide flights of steps are charming features in the style; while the gardens were often laid out in a formal manner with yews and box cut in fantastic shapes, as at Holland House (p. 705 A), Montacute, Longford, and Hatfield (p. 695).

Late Renaissance.—Plans are now marked by regularity and even by exaggerated symmetry, which aimed at uniting the various parts in an imposing façade (p. 737). The square type of plan sometimes had a central top-lit saloon, as at the Queen's House, Greenwich (p. 717 E), and the Villa at Chiswick (p. 734), and Mereworth (p. 737 G). The oblong type was usually divided into three, of which the centre third was occupied by hall, saloon, and stairs, as at Thorpe Hall (p. 737 M), Chevening (p. 737 H), Coleshill (p. 737 C), and Eltham (p. 737 E). The Italian "piano nobile" was adopted for many country houses (pp. 736 B, 742 A, E, 745 A, D, 746 A, B) with basement, not necessarily below ground, for cellarage and kitchen offices, while the principal rooms are approached either by a great external staircase with a portico (pp. 736 B, 742 A, 745 A, D, 746 A) or by an internal stair from the basement. Octagonal, circular, and elliptical-shaped apartments became usual, often arranged in various combinations, but these fanciful forms are not indicated externally (p. 737 G, J, L, N). Staircases received much attention, ingenious domical or other top-lights being introduced, as at Ashburnham House (pp. 741 A, 762 J), and there is no feature more characteristic than the well-designed staircases, with their stout newels, variously treated balusters, and consoled step ends (pp. 729 C, 762 L). Corridors gradually superseded the "thoroughfare" system of planning (p. 379), and added much to the convenience and privacy of houses. The Jacobean gallery survived in a modified form, as at Castle Howard (p. 742 B), Chatsworth, Holkham (p. 737 J), and Blenheim (p. 745 B).

B. **Walls.**

Early Renaissance.—Façades, both in brick and stone, are picturesque in character and often marked by a free use of the Classic "Orders" one above the other, as at Hatfield (p. 706 A), the Bodleian Library, Oxford (p. 706 C), Kirby Hall (p. 699 B), and Holland House (p. 705 A). Gables are often of scroll-work, due to foreign influence, and their general outlines are governed by the roof-slope (pp. 699 B, 705 A), while parapets are balustraded (p. 700 A) or pierced with letters or characteristic patterns (pp. 700 C, 705 A, 706 A). Chimney-stacks, either of cut brickwork or stone, follow Tudor traditions; the shafts are carried up boldly above the roof and are sometimes

disguised as columns, as at Burghley (p. 752 B) and Kirby (p. 699 B), and owing to their prominence on the skyline they play an important part in the design, thus differentiating it from Italian and approximating it to French treatment. Walls were frequently finished internally with panelling or wainscoting, with framing often joined by a "mason's mitre" (see Glossary), in small divisions of uniform size, as at Stockton House (p. 755 A), Hatfield (p. 693 A), Knole (p. 693 B), Haddon (p. 693 C), Crewe Hall (p. 694 A), and Sizergh (p. 694 B).

Late Renaissance.—Walls continued to be of stone, sometimes simulated by stucco, but Sir Christopher Wren popularised the use of red brickwork as at Belton House and Groombridge Place (p. 736); while the angles of walls were frequently emphasised by raised blocks or quoins, as at Swan House (p. 738 A), which in brick buildings were often of stone (p. 744[1] B), as also were the window architraves. The walls of Georgian houses are often terminated with well-designed cornices in brick (p. 738 A), stone (p. 762 B), or wood (pp. 744[1] B, 762 D, E), which, when painted white in conjunction with the window-frames, give pleasant relief to the façades, especially when of red brickwork. Plain ashlar wall surfaces served to throw into relief the ornate stonework of porticoes and windows (pp. 717 C, 736). Pediments and hipped roofs take the place of gables (p. 736), and chimneys are often hidden behind parapets, and thus the design approximates more in this respect to Italian Renaissance. The panelling of internal walls now generally extended in houses from floor to ceiling, and the wall surface was divided into dado, large panels, and moulded cornice, which gives a finished appearance and sense of comfort, as at Belton House (p. 741 C), and the Orangery, Kensington (p. 762 K).

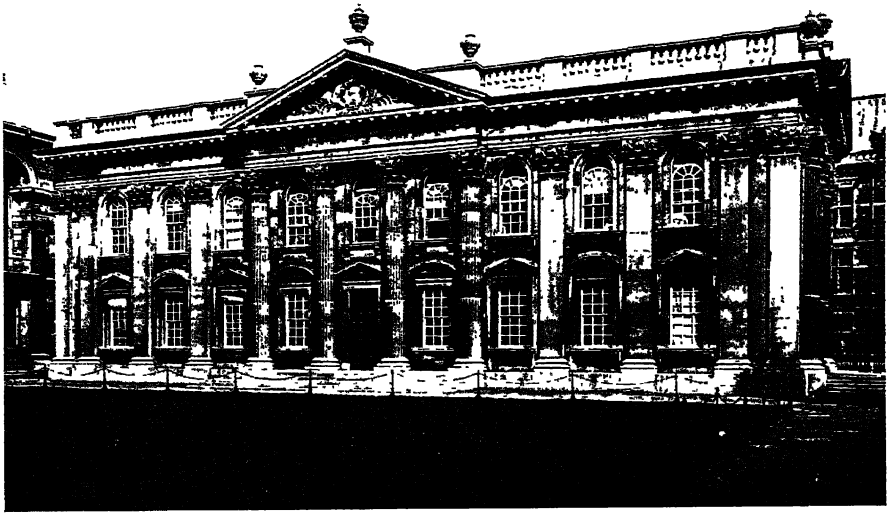
C. Openings.

Early Renaissance.—Arcades were introduced into the larger houses, such as Hatfield (p. 706 A), Bramshill (p. 752 J), and Holland House, Kensington (p. 705 A). Doorways are always important features, as at S. Catherine's Court (p. 752 H), and are sometimes elaborate in design, flanked by columns (pp. 699 B, 706, 752 B, G) and are an evidence of the hospitality of the times, which is expressed in the couplet at Montacute House:

> "Through this wide opening gate
> None come too early, none return too late."

Windows still resembled those of the Tudor period with vertical mullions, horizontal transoms, and leaded glass (pp. 699 B, 700 A, C, 705, 706). They became flat-headed instead of arched, to suit the level ceilings of dwelling-rooms. Projecting oriel windows, as at Bramshill (p. 752 A), and bay-windows were also much used and give light and shade to façades, as at Hardwick Hall (p. 700 A), Longleat, Holland House (p. 705 A), Hinchingbrooke Hall (p. 752 C), and Kirby Hall (p. 699 B).

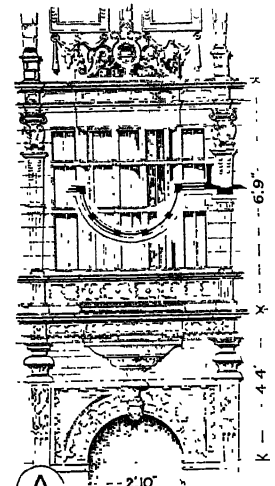
Late Renaissance.—Arcades, formed of columns of correct Classic proportions, are familiar features of this period, especially in the larger mansions, such as Blenheim (p. 745 A) and Castle Howard (p. 742 A). Arcades with superimposed Orders, under the influence of Palladio, became systematised (p. 756 K), as were also superimposed colonnades (p. 756 G), and various other combinations were used by Sir William Chambers (p. 756 D, F, J). Doorways became more formal in design, owing to the influence of Palladio



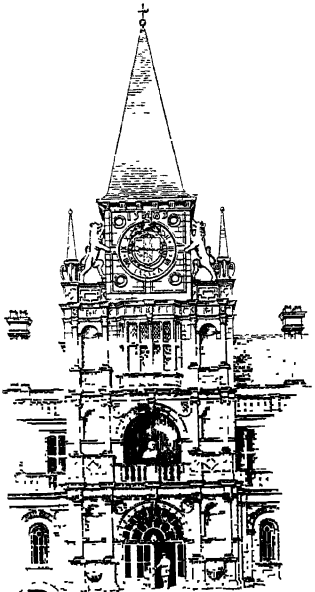
A. Senate House, Cambridge



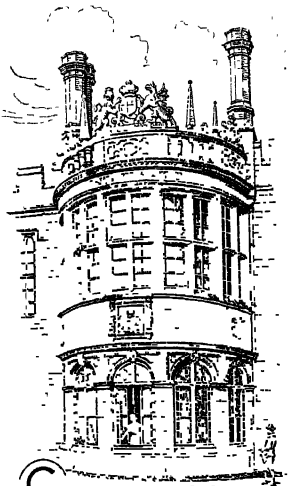
B. Somerset House, London



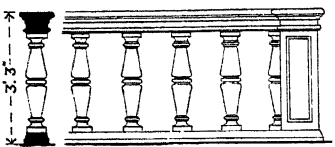
A ORIEL WINDOW
BRAMSHILL HOUSE: HANTS



B TOWER IN COURT
BURGHLEY HO. NORTHANTS



C BAY WINDOW
HINCHINGBROOKE HALL



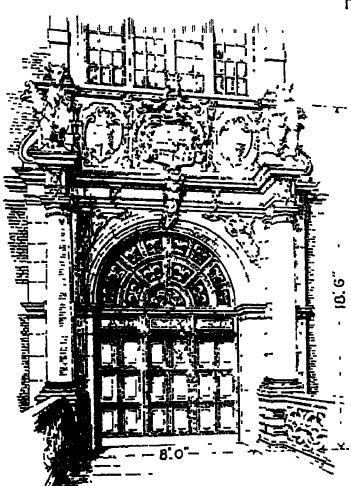
D BALUSTRADE
BRAMSHILL HOUSE: HANTS



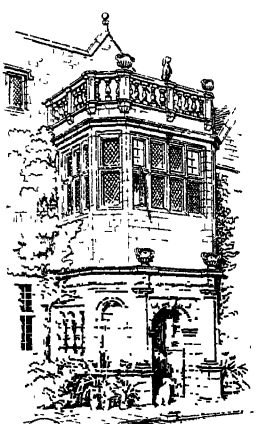
E RAIN WATER HEAD
CLAVERTON MANOR



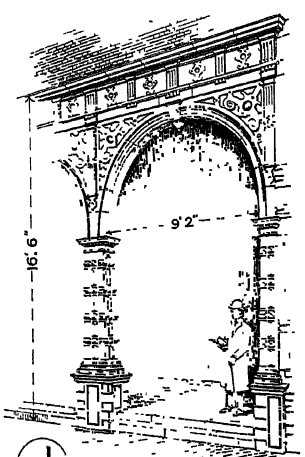
F BALUSTRADE
KINGSTON HOUSE: BRADFORD ON AVON



G ENTRANCE
BLICKLING HALL: NORFOLK



H PORCH: ST CATHERINE'S
COURT: SOMERSET



J ARCADE: BRAMSHILL: HANTS

(p. 736), and many treatments became standardised (pp. 756 B, 763 A, C). The doorways of Georgian houses are often special features of the façades, showing variety of treatment, and are sometimes provided with shell hoods (pp. 738 D, E, 762 G). Gateways, frequently filled in with wrought-iron gates, are flanked by well-proportioned piers of stone crowned with balls, sculptured figures, or armorial bearings (pp. 712 A, 738 A), and rustication was frequently employed (p. 756 A). Windows were much altered in character from the previous period and became smaller, for mullions and transoms, although sometimes used, as at Wolvesey Palace, Winchester (p. 762 H), went out of general use, and sash windows were introduced (pp. 717 C, F, 736, 738). These sash windows, placed almost flush with the outer face of the walls (p. 762 F), were painted white and form a pleasant colour scheme when flanked by green shutters, which contrast with the red brickwork commonly in use. The openings were surrounded by moulded architraves and frequently surmounted by a pediment (pp. 711 C, 723, 744[1] A), while larger openings were often formed in three divisions, as in Italy (p. 597)—a treatment much favoured by the Brothers Adam (pp. 730 A, 756 C, 763 B).

D. Roofs.

Early Renaissance.—Steep sloping roofs, sometimes covered with tiles or stone slabs, were still used (p. 752 B), as well as flat lead-covered roofs, and sometimes both occur together (pp. 699, 700, 705 A). Roofs were fronted with gables of the Gothic type, as well as with low pediments of Classic origin, even in the same building, and this is one of the many instances of reluctance to break with tradition (p. 705). Balustrades in great variety of design—arcaded, columned, pierced, or battlemented—were favourite features evolved from those of the Gothic period (p. 752 B, C, H).

Late Renaissance.—Sloping roofs were frequently "hipped" and without gables, because the cornice was now the characteristic feature of the building and gables were therefore inappropriate, while dormer windows now took the place of the windows in the gables of the Jacobean period (pp. 736, 738 A, 744[1] B, 762 B). A low-pitched pediment (p. 744[1] A) sometimes outlined the ends of sloping roofs, in contrast to the steep gables of the early period (p. 712). The upper part of the roof was often formed as a lead flat, surrounded by a balustrade and surmounted by a turret with a domical roof (p. 736 B). Balustrades played an important part in the general design, and partly concealed the flat-pitched roofs behind them (pp. 742, 745, 746). Domes and cupolas were much in vogue (p. 762 A, C), while splendid steeples, initiated by Sir Christopher Wren, rival and even surpass Mediæval spires in their fanciful storeyed outlines (p. 727).

E. Columns.

Early Renaissance.—The columns of the five Orders of architecture, as standardised by the Romans, were reintroduced, and indeed form the outstanding features of the Renaissance style; so much so that all five Orders were sometimes used one above the other, as in the Bodleian Library, Oxford (p. 706 C), and Burghley House (p. 752 B). They were employed in all parts of the building, externally in porches, gables, and even in chimney-stacks (pp. 699 B, 706), and internally in panelling, doorways, and fireplaces (p. 705 D, E). These columns, both circular and square, were as yet seldom correct, either in design or proportion, while pilasters, banded with strap-

work or prismatic ornament (p. 752 J), often tapered towards the base like the " Hermes " columns, which were also now used, especially in the design of hall screens and elaborate chimney-pieces (p. 694 A). Pedestals also received similar ornamentation.

Late Renaissance.—The Orders of architecture now lost the naïve incorrectness of proportion and detail which characterised them in the early period. After Inigo Jones' visits to Italy and his study of Palladio's buildings, columns, as in the Banqueting House (p. 711 C), and other buildings (p. 712), were more strictly designed according to the proportions laid down by that autocrat of architecture. Full scope was afforded for the display of the Orders in the spacious porticoes of churches (p. 723), country mansions (pp. 742, 744[1] A, 745, 746), and public buildings (pp. 748, 751), and they were often carried through two or more storeys to give an effect of unity, as at Greenwich Hospital (p. 717). Columns and pilasters are also the prevailing features of the Renaissance monuments introduced into Gothic churches, while panelling, doorways, and chimney-pieces of interiors conform to the same columnar style (p. 741). The canons governing proportions, first promulgated by Vitruvius and further systematised by Palladio, were again formulated by Sir William Chambers, who is generally accepted by English architects as the authority on this subject (pp. 756, 757).

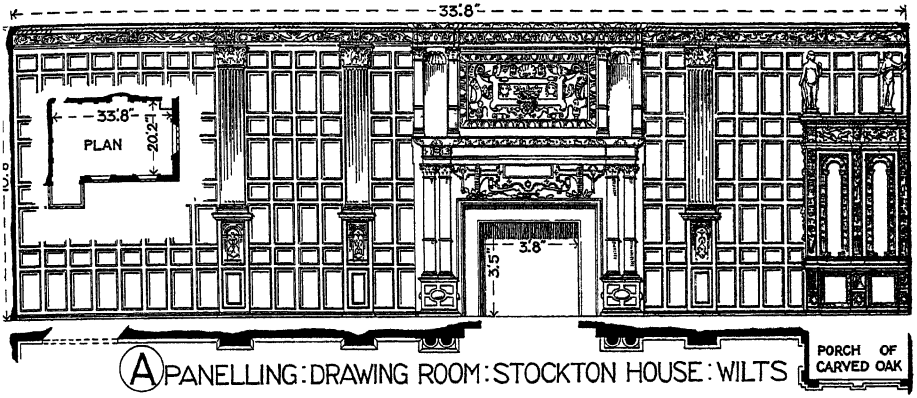
F. **Mouldings.**

Early Renaissance.—Mouldings once again reverted to Roman forms as applied to the bases and capitals of columns and their entablatures (pp. 119, 120), but naturally displayed considerable variety, due to lingering Gothic influence. They were often coarse in outline, but became more refined when used in wood panelling or plaster ceilings (p. 693). Bold convex mouldings, banded and decorated with strapwork (pp. 694 A, 705), characterise many Jacobean chimney-pieces as well as monuments and tombs.

Late Renaissance. — Mouldings, like other features, became more strictly Classical in form and, as the stock-in-trade of every craftsman, they admitted of little variety in design (pp. 119, 120). Mouldings in general, whether in stone, wood, or plaster, became bolder, and the large " ogee " moulding was the one chiefly in use round fireplaces and panels (pp. 738, 741).

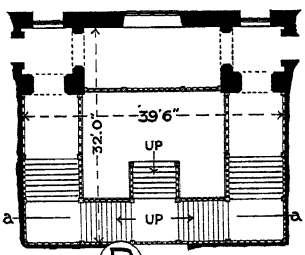
G. **Ornament.**

Early Renaissance (pp. 758, 761).—The carved ornament of the Early Renaissance period is often a strange mixture of Gothic and Renaissance forms, and this transitional treatment gives it a special interest. " Strap " ornament, now much employed in all materials, received its name from its resemblance to leather straps interlaced in geometrical patterns, attached to the background as if by nails or rivets (pp. 694 A, 762 J, 761 C, E). It was probably derived from the damascene work of the East, and appears on pilasters, as at Hatfield (p. 706), on piers, spandrels, and plaster ceilings, as at Bromley (p. 761 B), and in friezes, as at Yarmouth (p. 761 E) and Aston Hall (p. 761 C). Carved figures of mythological personages, and of grotesques, such as satyrs and fauns, are further evidence of Classic influence, while heraldry was freely employed (pp. 752 B, C, G, 761 D). Interiors owe much of their finished character to the carved wainscot panelling, wide stairs with carved newels (pp. 693 B, 755 C, E), chimney-pieces, as at Blickling Hall (p. 755 F), Crewe Hall (p. 694 A), and Holland House (p. 705 E), wall tapes-

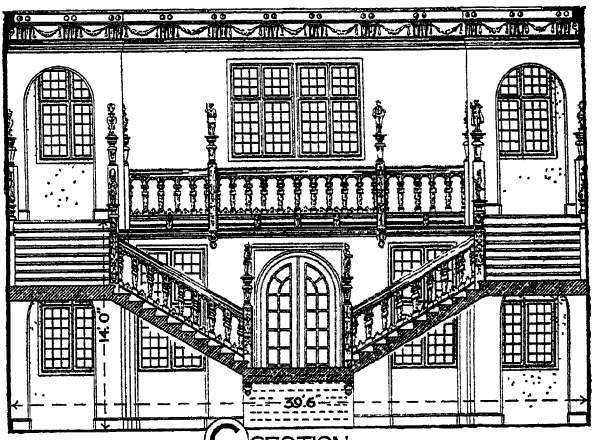


A PANELLING: DRAWING ROOM: STOCKTON HOUSE: WILTS

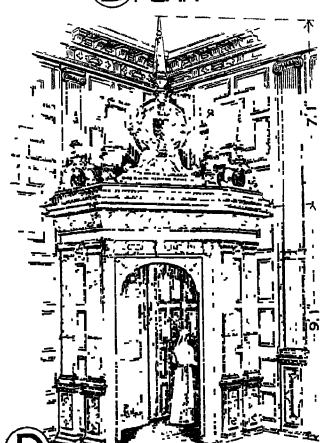
THE STAIRCASE
BLICKLING HALL
NORFOLK



B PLAN



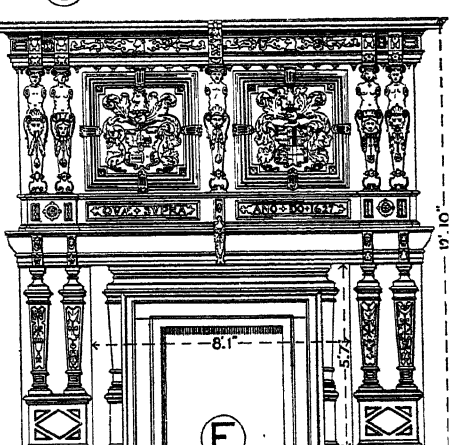
C SECTION a-a



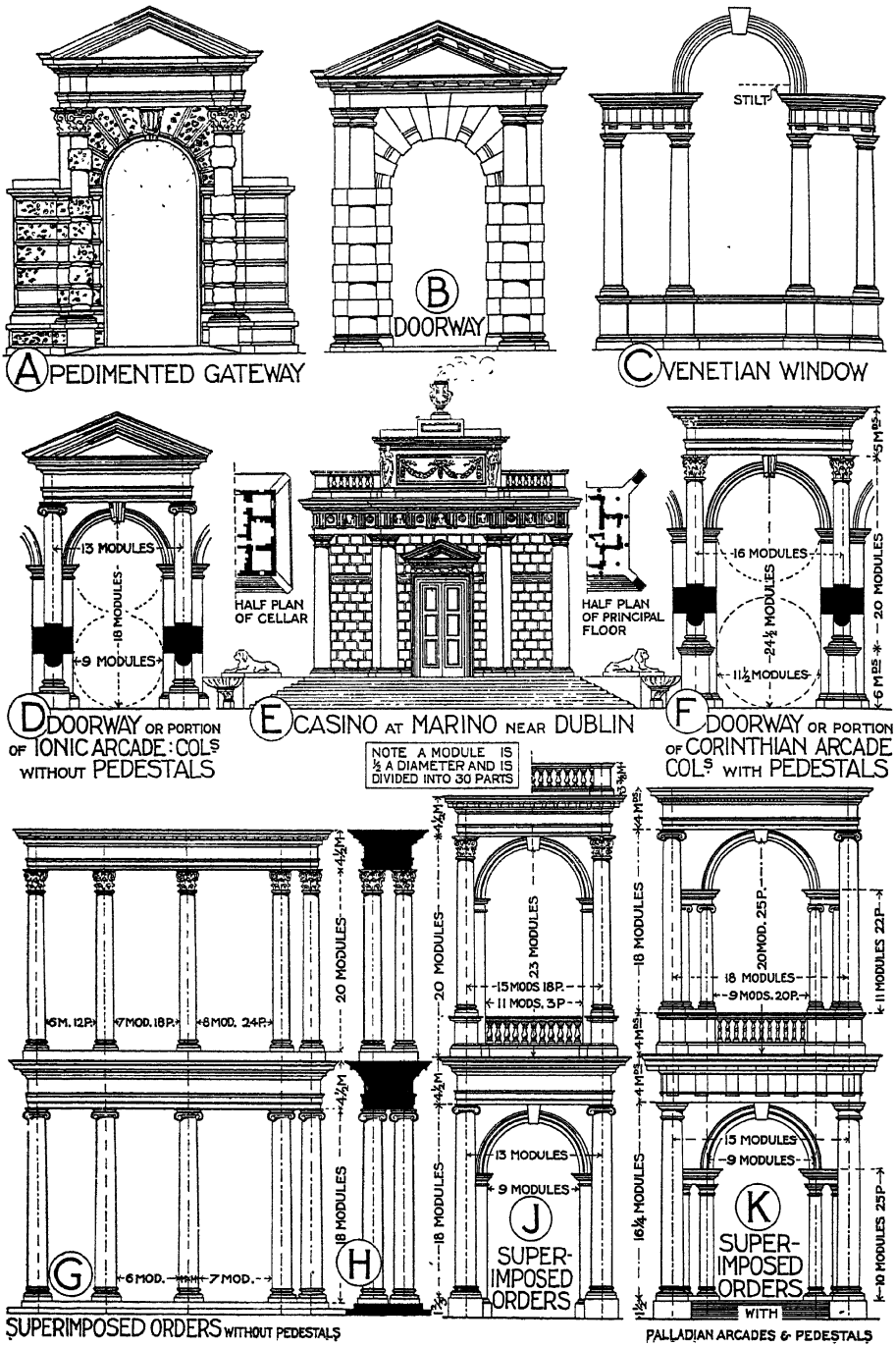
D DOORWAY
BROUGHTON CASTLE: OXON



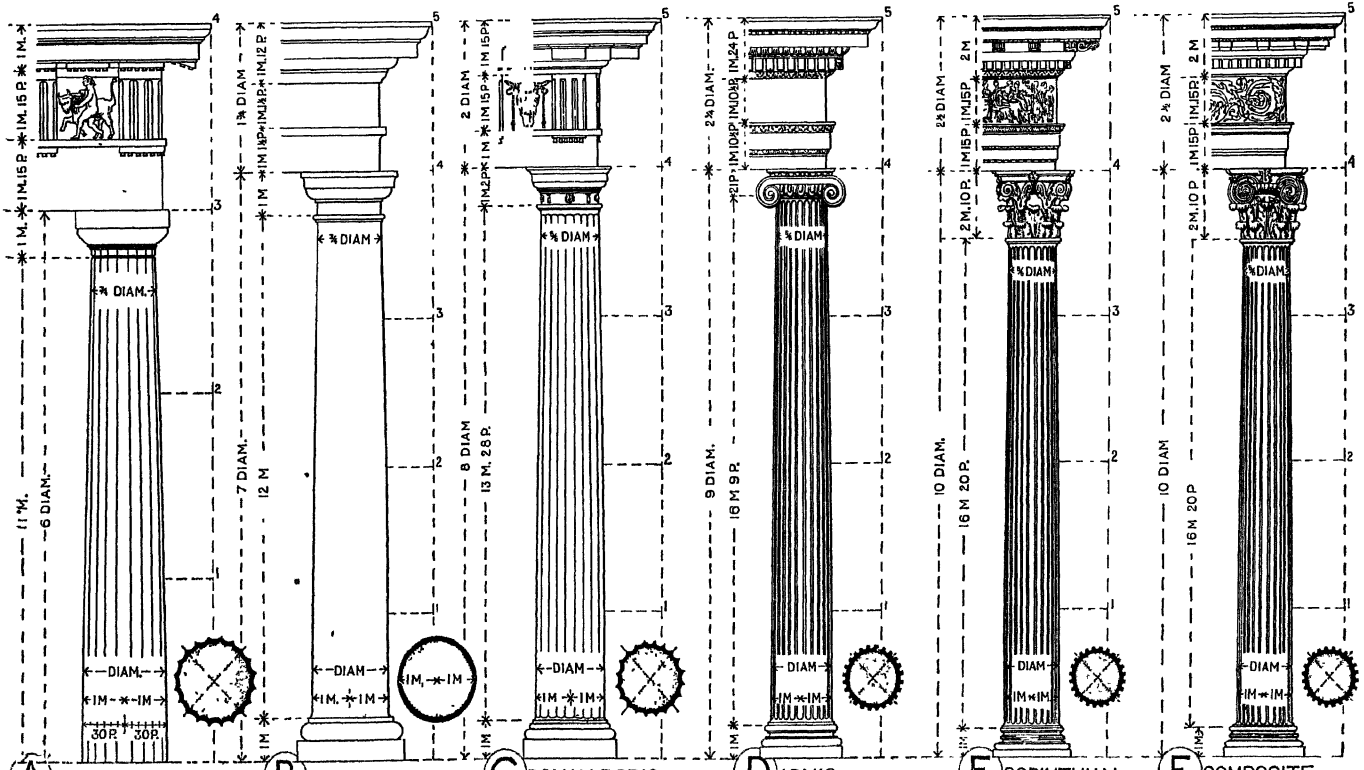
E NEWEL
HATFIELD
HO. HERTS



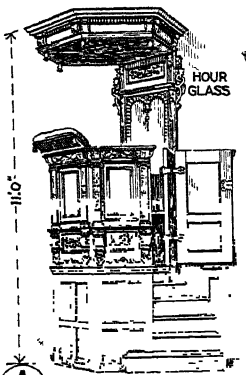
F CHIMNEY PIECE: BLICKLING HALL


A PEDIMENTED GATEWAY
B DOORWAY
STILT
C VENETIAN WINDOW
13 MODULES
18 MODULES
9 MODULES
D DOORWAY OR PORTION OF IONIC ARCADE: COLS WITHOUT PEDESTALS
HALF PLAN OF CELLAR
HALF PLAN OF PRINCIPAL FLOOR
E CASINO AT MARINO NEAR DUBLIN
NOTE A MODULE IS ½ A DIAMETER AND IS DIVIDED INTO 30 PARTS
16 MODULES
24½ MODULES
11½ MODULES
20 MODULES
F DOORWAY OR PORTION OF CORINTHIAN ARCADE COLS WITH PEDESTALS
6M. 12P.
7 MOD. 18P.
8 MOD. 24P.
20 MODULES
G
6 MOD.
7 MOD.
8 MODULES
H
SUPERIMPOSED ORDERS WITHOUT PEDESTALS
23 MODULES
15 MODS 18P.
11 MODS. 3P.
20 MODULES
13 MODULES
9 MODULES
J SUPER-IMPOSED ORDERS
18 MODULES
20 MOD. 25P.
18 MODULES
9 MODS. 20P.
16¼ MODULES
15 MODULES
9 MODULES
K SUPER-IMPOSED ORDERS WITH
11 MODULES 22P
10 MODULES 23P
PALLADIAN ARCADES & PEDESTALS

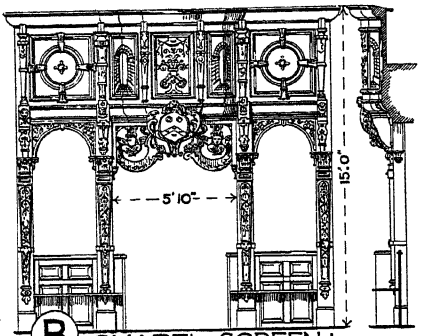
COMPARATIVE PROPORTIONS OF THE ORDERS AFTER SIR W. CHAMBERS



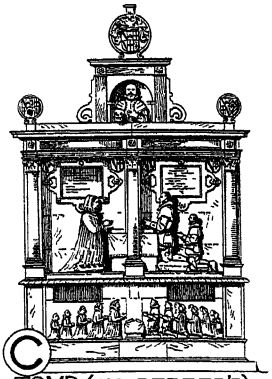
NOTE.—A module is half the lower diameter and is divided into 30 parts.



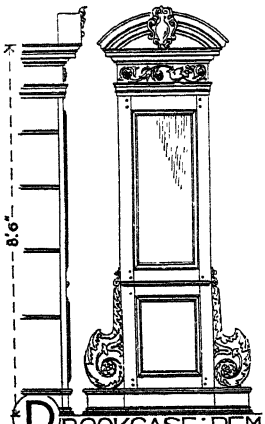
A PULPIT: N. CRAY CHURCH: KENT



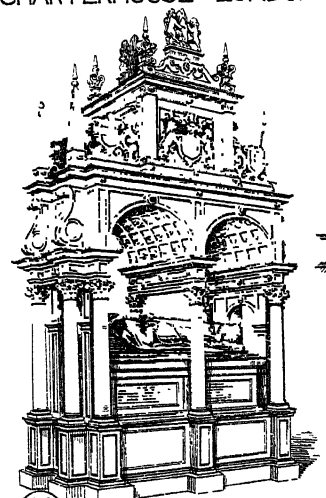
B CHAPEL SCREEN: CHARTERHOUSE: LONDON



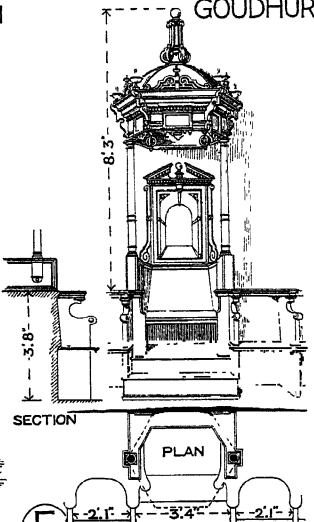
C TOMB (CULPEPPER'S) GOUDHURST



D BOOKCASE: PEMBROKE COLL. CAMBS.



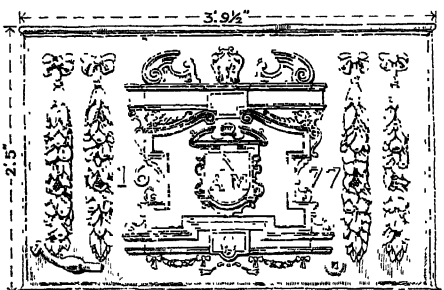
E TOMB OF Lᴰ BURGHLEY S. MARTIN: STAMFORD



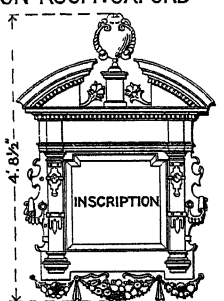
F THRONE & STALLS CONVOCATION ROOM: OXFORD



G WALL TABLET: ALL HALLOWS' BARKING



H LEAD CISTERN VICTORIA & ALBERT MUSEUM



J WALL TABLET PETERHO. COLL. CHAPEL: CAMBS.

tries, and modelled plaster ceilings, as at Audley End (p. 761 A), developed from the rib and panel type of the Tudor period (p. 337). Renaissance features also pervaded every branch of the allied arts and crafts, as in the following examples: The monuments to Elizabeth (A.D. 1604) and Mary, Queen of Scots, in Westminster Abbey; the tomb of Lord Burghley (A.D. 1598) (p. 758 E); the Culpepper Tomb, Goudhurst (p. 758 C); the chapel screen at the Charterhouse (p. 758 B); the doorway in Broughton Castle (A.D. 1599) (p. 755 D); the bookcase at Pembroke College, Cambridge (p. 758 D); the throne and stalls in the Convocation Room, Oxford (A.D. 1639) (p. 758 F); the pulpit in North Cray Church, Kent (p. 758 A); the rain-water head from Claverton Manor (p. 752 E); a cistern now in the Victoria and Albert Museum (p. 758 H); the tablets in Peterhouse Chapel, Cambridge (p. 758 J), and All Hallows, Barking (p. 758 G); the entrance porch (p. 752 G) and chimney-piece at Blickling Hall (p. 755 F); while the style was also applied to the furniture of the period, such as chairs (p. 761 K), chests, tables (p. 761 G), stools (p. 761 F), table settles (p. 761 J), cupboards (p. 761 H, N), and bedsteads (p. 761 L).

Late Renaissance (pp. 763, 769). — The carved ornament of the later period is an Anglicised version of the fully developed Italian Renaissance, from which all trace of Gothic influence disappeared as Classic tradition re-asserted itself. The style of Louis XIV naturally affected decorative art in England; while later on the Brothers Adam show the effect of the simpler Classic tradition in their designs. Interiors are characterised by large wall panels (p. 741 C), often containing family portraits, which also appear over chimney-pieces which otherwise became simpler in treatment (p. 741 B). Plaster ceilings are boldly set out in squares, ovals, or circles, framed in by mouldings, on which fruits and flowers are modelled in high relief (pp. 729 B, 741 A, C). Walls and ceilings were sometimes painted with frescoes, such as those by Verrio and Sir James Thornhill at Blenheim Palace and Hampton Court. Renaissance features, now more sedate in type, were reproduced in all decorative features, such as the archway at Wilton (p. 763 D) by Sir William Chambers, the gate piers (p. 763 G) by Inigo Jones, the circular window (p. 763 E) by Gibbs, the typical chimney-pieces (p. 763 H, K) by Gibbs; in the numerous wall tablets of the period (p. 763 F) and in monuments, such as that of the Duke of Newcastle in Westminster Abbey (p. 763 J); in casinos, such as that near Dublin (p. 756 E), and covered bridges, as in Prior Park, Bath, and Wilton (p. 712 E), and in buildings resembling Roman temples, such as the circular temple in Kew Gardens by Sir William Chambers, which it had become the fashion to introduce into the plans of formal gardens, usually decorated with such accessories as ornamental vases and sundials (p. 738). Houses owe much of their interest to the beautiful fittings and furniture with which they were completed by Chippendale, Hepplewhite, Sheraton, and their followers. Chairs (p. 769 A, C), settees (p. 769 B), tables (p. 769 N, P, Q), waiters (p. 769 D), book-cases (p. 769 H, M), clocks (p. 769 F, K), mirrors (p. 769 E), candlestands (p. 769 L), gueridon (p. 769 J) and pedestals (p. 769 G) all help to give a comfortable feeling to houses of this period.

5. REFERENCE BOOKS

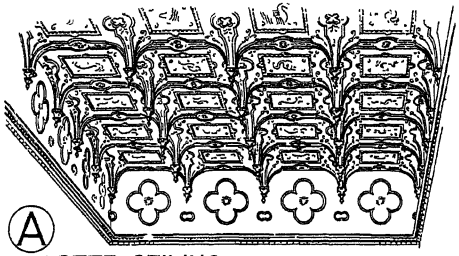
ELIZABETHAN AND JACOBEAN

Ambler (L.).—" Old Halls and Manor Houses of Yorkshire." 4to. 1913.
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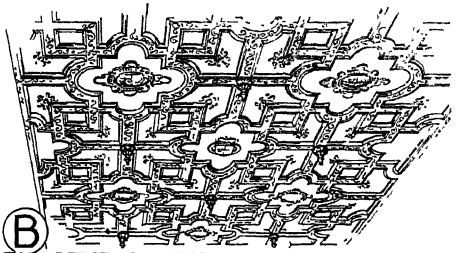
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A PLASTER CEILING: AUDLEY END: ESSEX



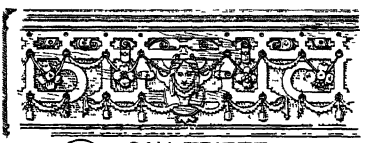
B PLASTER CEILING: OLD PALACE: BROMLEY BY BOW: NOW IN VICTORIA & ALBERT MUSEUM



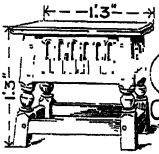
C STONE FRIEZE ASTON HALL



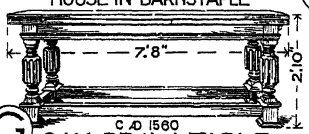
D PLASTER PANEL HOUSE IN BARNSTAPLE



E OAK FRIEZE HOUSE AT YARMOUTH

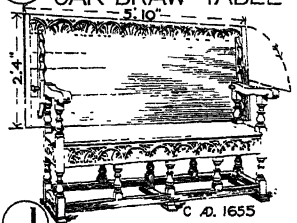


F OAK STOOL C. A.D. 1600



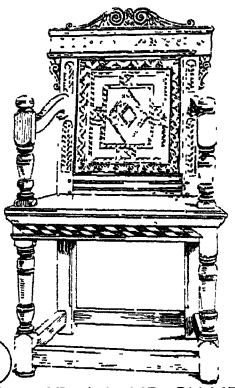
C. A.D. 1560

G OAK DRAW-TABLE

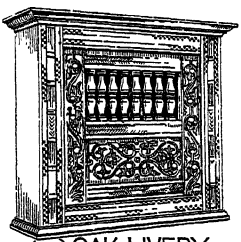


C. A.D. 1655

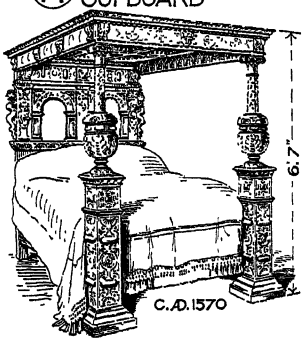
J OAK TABLE SETTLE



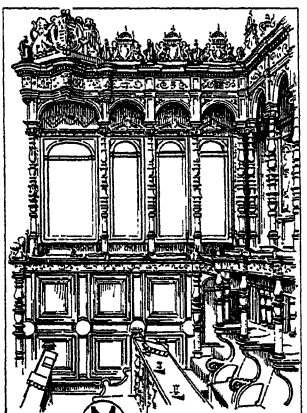
K WALNUT INLAID CHAIR C. A.D. 1590



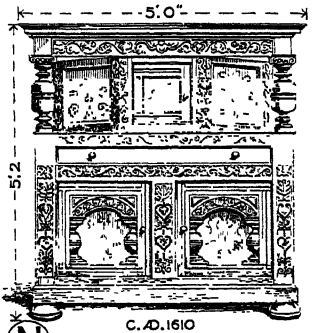
H OAK LIVERY CUPBOARD C. A.D. 1635



L OAK BEDSTEAD

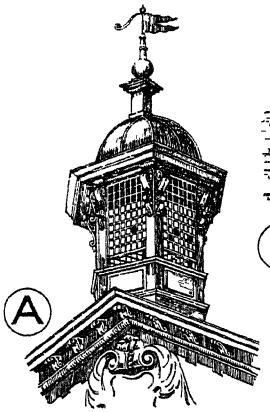


M STALLS C. A.D. 1533 KING'S COLLEGE CHAPEL: CAMBS.

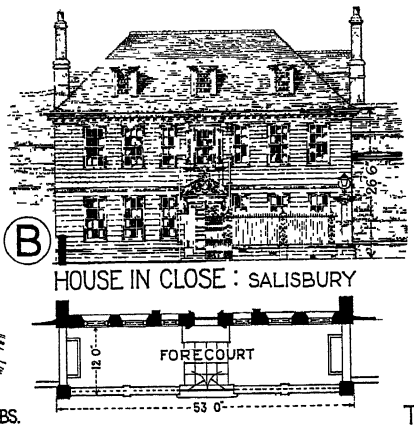


C. A.D. 1610

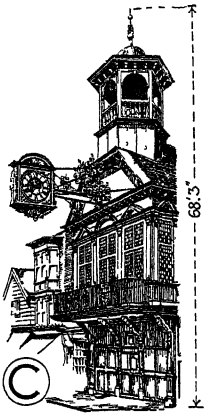
N OAK COURT CUPBOARD



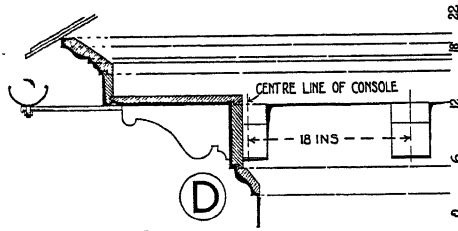
TURRET: PEMBROKE COLL. CAMBS.



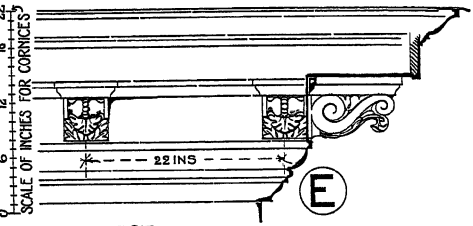
HOUSE IN CLOSE: SALISBURY



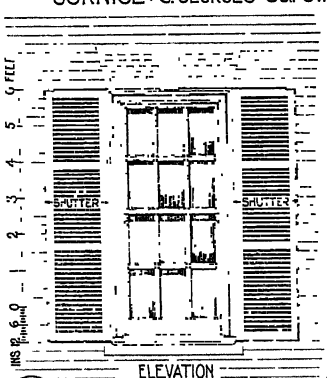
TOWN HALL: GUILDFORD



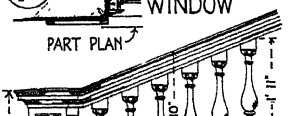
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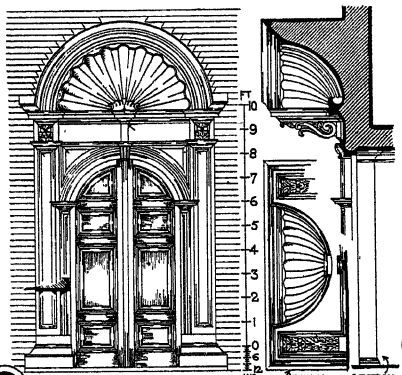


CORNICE: MORDEN COLL. BLACKHEATH

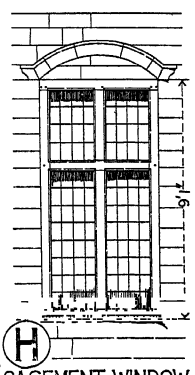


GEORGIAN SASH WINDOW



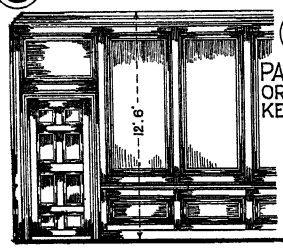


DOORWAY: HAMPSTEAD

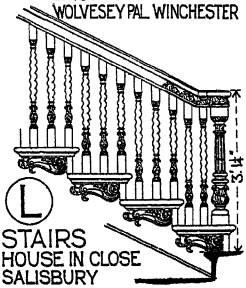


CASEMENT WINDOW
WOLVESEY PAL. WINCHESTER

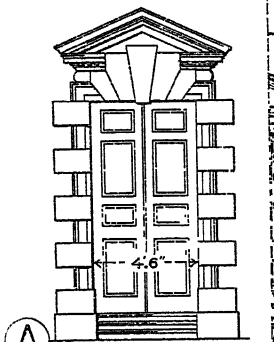
STAIRS: ASHBURNHAM HOUSE: WESTMINSTER



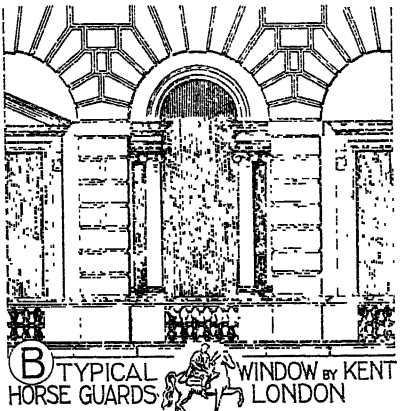
PANELLING
ORANGERY
KENSINGTON



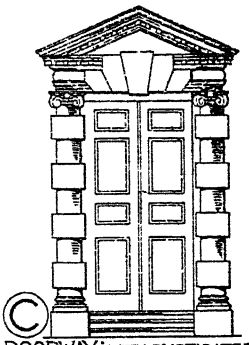
STAIRS
HOUSE IN CLOSE
SALISBURY



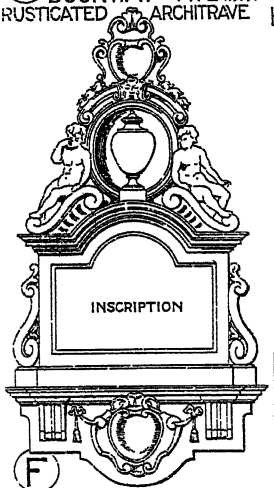
A DOORWAY: TYPE WITH RUSTICATED ARCHITRAVE



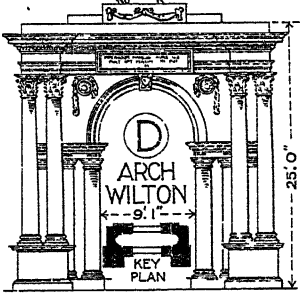
B TYPICAL WINDOW BY KENT HORSE GUARDS LONDON

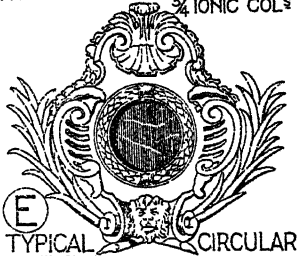


C DOORWAY: WITH RUSTICATED ¾ IONIC COLS

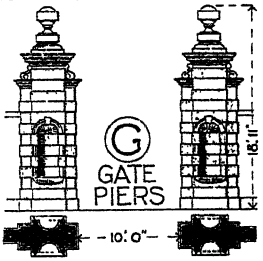


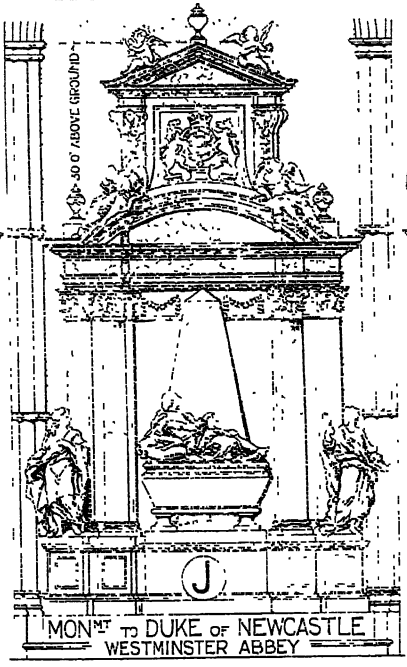
F MONUMENT TO SIR JOHN BRIDGMAN ASTON: WARWICKSHIRE

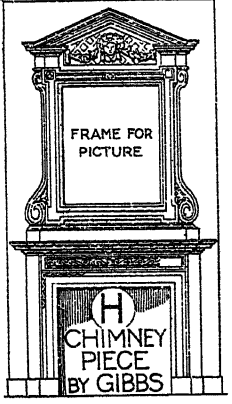


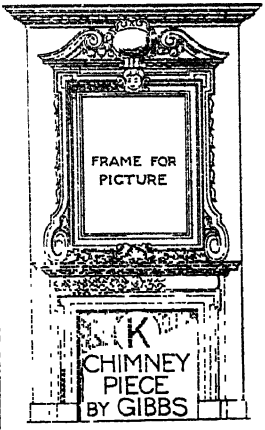


E TYPICAL CIRCULAR WINDOW: S. MARTIN: LONDON









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MODERN ARCHITECTURE IN ENGLAND

(THE AGE OF REVIVALS)

Modern architecture covers the period included in the reigns of William IV (A.D. 1830–37), Victoria (A.D. 1837–1901), Edward VII (A.D. 1901–10), and of our present King, George V.

The wonderful nineteenth century surpassed all its predecessors in the variety of its discoveries and in the extent of their application to the needs of daily life. The whole period down to the present day teems with inventions which have changed social habits ; so that, in order to appreciate the position of architecture as an integral part of national life, we must take stock of some of the most startling of the great controlling agencies which then began to operate. Science, which had long been merely the basis of speculative research for the few, now became the basis of practical life for the many, as it passed out of the study and laboratory into the workshop and factory. Knowledge was no longer allowed to run to waste, but was pressed into the service of humanity. A signal instance of this is found in the invention of photography, by which works of art of all ages and countries could be made familiar to the public. Steam became the motive power for locomotion on sea and land, and made sailing vessels and stage coaches obsolete. Coal was utilised to give gas for light, instead of the old lamp and candle. Electricity was laid under tribute for carrying messages, lighting buildings, and for propelling vehicles. Telegraph, telephone, and phonograph, the gramophone and wireless telegraphy all indicate unprecedented progress along the lines of applied science ; while later the invention of aeroplanes and airships enables men to travel more rapidly through the air than is possible by land or sea. The invention of X-rays and the employment of radium have enlarged the possibilities of medical science, and the invention of the submarine has added new methods of naval warfare. These are only some of the astonishing developments of this wonderful period which are mirrored in our complex modern architecture.

The architecture of this period, as might be expected, provides as fascinating a study as do any other developments of the nineteenth and twentieth centuries, but is, moreover, so near to us in time as to make it difficult to form a detached judgment of its character. We propose, therefore to apply a more general treatment to modern architectural developments than has been adopted for the styles of past ages.

In previous periods of architecture we have shown the varying and progressive results which arose under the operation of the geographical, geological, climatic, religious, social, and historical influences, but from the be-

ginning of the nineteenth century the operation of these influences becomes modified. Thus geographical influence has been considerably lessened by the introduction of steam and electricity for transport with the consequent rapid intercommunication between countries, so that national customs and peculiarities become less marked, and the geographical position of a country no longer regulates its architecture to the same extent as formerly. Geological influence has been similarly modified ; for it is obvious that modern transport makes it possible for bricks to be carried into stone countries and stone into brick countries in a way which was formerly impracticable. Climatic influence must always remain fairly constant, regulating the size of doors and windows, the pitch of roofs, and the use of chimneys. Religious influence, which had, in some countries, already been modified by the introduction of Protestantism at the Reformation, now in these latter days passed through yet another phase, especially in England, by the breaking off from the Established Church of various sects, and the religious influence, thus dissipated into a variety of sectarian channels, produced multitudes of places of worship, in addition to the old English parish churches, in the towns and villages throughout the country. In the twentieth century, too, people are still, like the Athenians of old, seeking for some new thing, some new manifestation of world-old truths, and varieties of religious experiences and of religious and philosophical research find their latest expression, in the Old World and in the New, in fine buildings dedicated alike to Christianity and Science. The social influence has been responsible for an enormous number of buildings for the various requirements of our diverse social life, so that modern architecture has that complicated character which makes it often so difficult of classification ; but it is safe to say that architecture does express, now even more than ever, the civilisation of the times, as it did in all past periods, when public life was simple and its activities more homogeneous. The historical influence, although not so apparent as in past ages, acts much more swiftly owing to the rapidity of communication. Apart from other historical events, one of the mightiest forces was the French Revolution (A.D. 1789), with the break-up of tradition, not only in France, but also throughout Europe, and the new spirit of this restless time is seen in new movements in thought and art. The Napoleonic wars temporarily arrested the growth of art ; but after A.D. 1815 a new era of peace opened up facilities for travel, which gave opportunities for the study of past styles, and thus aided various revivals which are specially conspicuous in modern architecture in England, and indicate that love of freedom and of liberty of choice which has always characterised the English race. Whereas in previous centuries architecture had steadily developed on traditional lines, at the beginning of the nineteenth century the foundations of all tradition had been so shaken that even architecture no longer proceeded along the lines of gradual evolution ; tradition ceased to maintain its former power and eclecticism had full play in design. Architects reverted to Classic or to Mediæval art, and for a time there raged what is known as the " Battle of the Styles," in which the most conspicuous of the opposing camps were ranged under the standards of the " Greek Revival " and the " Gothic Revival."

The " Greek Revival " had been foreshadowed as early as A.D. 1750, when for a time Greek superseded Latin Classics in the estimation of men of culture, and Greek temple-architecture held sway in Europe till the middle of the nineteenth century. This love for antiquity was reflected in the publication (A.D. 1753–57) of books on Palmyra and Baalbek by Robert

Wood and the " Palace of Diocletian at Spalatro " by Robert Adam ; while the Greek Revival is mirrored in the publication of the " Antiquities of Athens " by Stuart and Revett (A.D. 1762), and in the works of the Dilettanti Society (A.D. 1769). The treatise on the Erechtheion, Athens, by Inwood (A.D. 1831), the publication of the " Greek Temples of Ægina and Bassæ " and other writings of Professor C. R. Cockerell (A.D. 1788–1863), and the monograph on Athenian Architecture by F. C. Penrose (A.D. 1860) all gave a further impetus to the Greek Revival, which had also been greatly stimulated by the arrival in London (A.D. 1801) of the famous Greek sculptures from the Parthenon, known as the " Elgin Marbles."

The " Gothic Revival " proceeded almost *pari passu* with the Greek and was much influenced by the literature of the day, and indeed attention had already been drawn to the beauties of Mediæval architecture when Horace Walpole erected Strawberry Hill (A.D. 1753–78) (now part of S. Mary's College) in the pseudo-Gothic style, and James Wyatt, R.A. (A.D. 1746–1813), designed Fonthill Abbey (A.D. 1796–99) and Ashridge Park (A.D. 1806–13) on the lines of a monastic building adapted for domestic use. From A.D. 1815 onwards, various writers, including Sir Walter Scott, Goethe, and Victor Hugo, made Mediævalism fashionable in literature, and this Romantic School aided a similar movement in architecture. This revival was very much influenced by art lovers and architects who wrote analytical and descriptive works on the Mediæval period. Amongst these may be mentioned " Gothick Architecture Improved " (A.D. 1742) by Batty Langley ; " An Attempt to Discriminate the Gothic Styles " (A.D. 1819) by Thomas Rickman ; " The Cathedrals of England (A.D. 1814–19) " by Storer ; " The Architectural Antiquities of Great Britain " (A.D. 1807–26) by John Britton ; " The Cathedral Antiquities of Great Britain " (A.D. 1814–36) by John Britton ; " Specimens of Gothic Architecture " (A.D. 1821) by Augustus Pugin ; " Examples of Gothic Architecture " (A.D. 1831) by Augustus Pugin (A.D. 1762–1832) and his son, A. Welby Pugin (A.D. 1812–52), who also published " The True Principles of Gothic Architecture " ; " Gothic Ornaments " (A.D. 1848) and " Details of Gothic Architecture " (A.D. 1856) by J. K. Colling ; " The Churches of the Middle Ages " and " An Analysis of Gothick Architecture " (A.D. 1849) by Brandon. Other writers were Edmund Sharpe (A.D. 1809–77), author of " Architectural Parallels " and also of a system of nomenclature according to window tracery for the periods of English Gothic Architecture ; Owen Jones (A.D. 1809–74) with his " Grammar of Ornament " and James Fergusson (A.D. 1808–86), the first to publish a comprehensive " History of Architecture." Ruskin's " Seven Lamps of Architecture " (A.D. 1849) and " Stones of Venice " (A.D. 1851) also rekindled the love for Mediæval art and drew popular attention to the ruling principles of Gothic architecture, which were then applied in the building and restoration of churches.

The Great Exhibition of A.D. 1851 served to give publicity and popularity to the various arts and crafts, particularly of the Mediæval period, and encouraged the study of the writings of Paley, Wilde, Coney, Cotman, Whewell, Willis, Edmund Sharpe, Parker, Petit, and Beresford Hope. All this resulted in a better understanding of Mediæval art and led to the establishment of the South Kensington (now " Victoria and Albert ") Museum, where specimens of art and architecture of the past were collected for reference and study. Meanwhile the expansion of social needs gave rise to an increasing variety of public buildings, and the so-called " Battle

of the Styles" eventually resulted in a generally accepted compromise, under which churches were designed in the Gothic style, owing to clerical influence; while, after the building of the Law Courts, London (A.D. 1874–82), the Renaissance style was retained as more suitable for public buildings.

In the eighteenth century the greater and older established schools, such as Eton, Winchester, and Westminster, had attracted students away from the grammar schools, some of which were for a time reduced to the status of elementary schools. In the nineteenth century many important public schools were founded, such as the Colleges of Cheltenham (A.D. 1841), Clifton (A.D. 1862), Haileybury (A.D. 1862), Lancing (A.D. 1848), Marlborough (A.D. 1843), Malvern (A.D. 1863), Radley (A.D. 1847), Rossall (A.D. 1844), and Wellington (A.D. 1859).

Education was much affected by the Public Schools Commission (A.D. 1863) and the School Enquiry Reports (A.D. 1868), which opened a better era for general education and started well-governed schools, free from religious tests. In our own day educational institutions, like others of public interest, have passed under a democratic change. Elementary education, which was for too long a thing of chance, became a national care. Board Schools, rendered inevitable since A.D. 1839 by the national system of elementary education, and now Council Schools, supply a free ladder from elementary schools, through secondary and continuation schools to the Colleges of the Universities, where the new ideals are still served by the old buildings.

Many novel types of buildings now sprang up, such as museums provided by generous benefactors, public libraries, due to the Public Library Acts, and town halls after the Municipal Corporation Act, A.D. 1835. Besides these, there are markets, hospitals, swimming baths, drill halls, technical colleges, art galleries, cinema theatres, factories, aerodromes, and benevolent institutions, which are all the outcome of the complex social and industrial requirements of a rapidly increasing population. Domestic architecture, too, now advanced with rapid strides, and many houses were erected in the revived Queen Anne and Georgian styles or in a domestic type of Tudor Gothic with casement windows; while old Jacobean architecture was successfully adapted for many a modern country mansion. As regards present-day developments the recent Town Planning Acts have already produced striking results in the laying out of "garden cities" and in the erection of houses which, if not always artistic, are at least sanitary and convenient, and along such lines will the architecture of the future be applied to the service of the people.

The buildings given below, which are in no sense exhaustive, are divided into the Classic School (including Greek, Roman, and Renaissance) and the Gothic School, and are classified under the architects' names, because architectural style still continued, as in the Renaissance period, to be the product of individual fancy rather than of national effort.

THE CLASSIC SCHOOL

H. W. Inwood (A.D. 1794–1843).—S. Pancras Church, London (A.D. 1819–22), in the Greek style, inspired by the Erechtheion, Athens (p. 100), with hexastyle portico, vestries resembling the Caryatid Portico, and a steeple, which is a two-storeyed version of the Tower of the Winds, Athens (p. 111).

THE GOTHIC SCHOOL

James Savage (A.D. 1779–1852).—S. Luke, Chelsea (A.D. 1820), an early attempt at revived Gothic, in which a galleried church of Renaissance type is clothed with Gothic details.

Sir Jeffrey Wyatville, R.A. (A.D. 1766–1840), nephew of James Wyatt.—Continued Ashridge Park (p. 766)

THE CLASSIC SCHOOL

John Nash (A.D. 1752–1835).—Designed a fine London town-planning scheme represented by Regent Street and its colonnaded quadrant (A.D. 1813) (colonnades now removed); All Souls', Langham Place, London (A.D. 1822), with its spire over a Classic porch in a commanding position; Portland Place and Regent's Park (A.D. 1821) with palatial blocks of symmetrical architecture in which stucco was used; the Marble Arch, London (A.D. 1825); Buckingham Palace (A.D. 1825)—east façade by Blore (A.D. 1846), refaced by Sir Aston Webb; Haymarket Theatre (A.D. 1820); United Service Club (A.D. 1828)—altered by Decimus Burton (A.D. 1858).

William Wilkins (A.D. 1778–1839).—University College, London (A.D. 1828), with remarkable portico on a high podium; the National Gallery, London (A.D. 1832–38), utilising the columns of old Carlton House; S. George's Hospital, London (A.D. 1827); the Museum, York; Downing College, Cambridge, and Grange House, Hants (A.D. 1820).

Sir Robert Smirke (A.D. 1780–1867).—Pupil of Sir John Soane. The British Museum (A.D. 1823–47), notable for the Ionic portico, and library dome, 140 ft. in diameter, completed (A.D. 1855) by Sydney Smirke; the Union Club (A.D. 1822); the General Post Office (A.D. 1825) (demolished); King's College, London (A.D. 1828).

George Basevi (A.D. 1795–1845).—Pupil of Soane. Fitzwilliam Museum, Cambridge (A.D. 1845), in the Græco-Roman style; Conservative Club, London (A.D. 1837), with Sydney Smirke.

Decimus Burton (A.D. 1800–81).—Entrance Screen, Hyde Park Corner (A.D. 1828); Triumphal Arch, Constitution Hill (A.D. 1846); Athenæum Club, Pall Mall (A.D. 1830).

H. L. Elmes (A.D. 1815–47).—S. George's Hall, Liverpool (A.D. 1839) (p. 770 A), the most perfect design of the Classic School, the great hall based on the tepidarium of the Thermæ of Caracalla, Rome (p. 159), while externally a colonnade design is handled with great effect. Professor Cockerell completed the decoration of the interior (A.D. 1854).

Sir William Tite (A.D. 1798–1873).—Royal Exchange, London (A.D. 1842), in which

THE GOTHIC SCHOOL

(A.D. 1813–20); he also transformed Windsor Castle (A.D. 1826) and thus started a fashion for castellated mansions, battlemented and turreted in imitation of Mediæval castles, while internally of Georgian architecture.

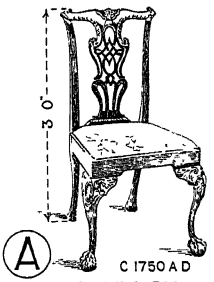
William Wilkins (A.D. 1778–1839).—New Court, Trinity College, and new buildings, King's College, Cambridge.

John Shaw (A.D. 1776–1832).—S. Dunstan in the West, Fleet Street (A.D. 1831), London, a fine treatment of a town church with steeple in imitation of "Boston Stump."

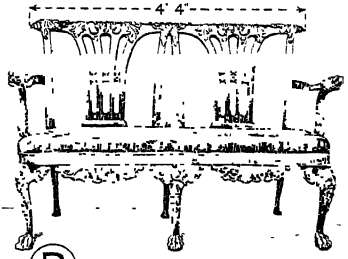
Augustus Welby Northmore Pugin (A.D. 1812–52).—Acquired an extraordinary knowledge of Mediæval architecture through helping with his father's books. Published a rousing pamphlet contrasting the "degraded" architecture of the day with what he called the "Christian" style, and sought to restore the fervour of faith and self-denying spirit which were the foundations of the artistic creations of the Middle Ages. This study of Mediæval Church-building inaugurated a new era in the Gothic revival. Pugin erected over sixty-five churches in the United Kingdom, and many in the colonies, besides convents, monasteries, mansions, and schools, and also collaborated with other architects. His numerous buildings include S. George's Cathedral, Southwark (A.D. 1845), and Roman Catholic churches at Nottingham, Derby, Birmingham, and Ramsgate (A.D. 1855). Assisted Sir Charles Barry on the fittings, stained glass, and metalwork of Westminster Palace.

Sir Charles Barry (A.D. 1795–1860).—Birmingham Grammar School (A.D. 1833), an early example in the revived Gothic style; Westminster Palace (A.D. 1840–60) (p. 770 B), in which symmetry of plan, simplicity of idea, and richness of character pervade the design, which is Classic in inspiration, Gothic in clothing, and carried out with scrupulous adherence to the architectural detail of the Tudor period. Barry was assisted by Pugin in the scheme of decoration and in the elaborate fittings in the Tudor style, and thus the building and its internal decoration form one harmonious design, the immediate influence of

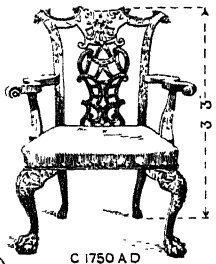
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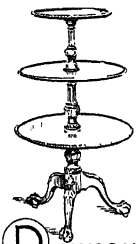
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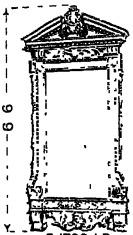
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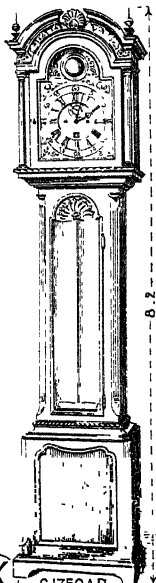
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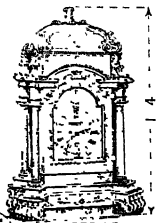
D MAHOGANY WAITER



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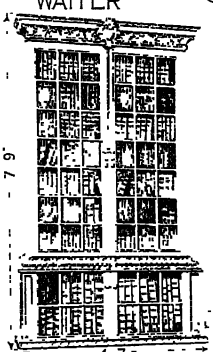
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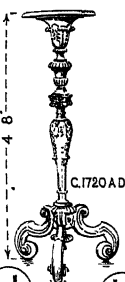
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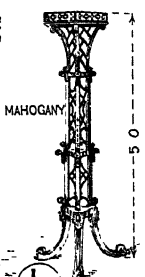
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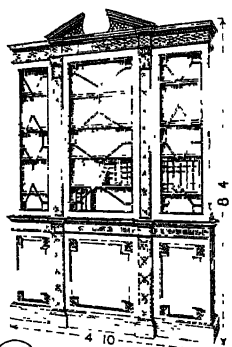
H OAK BOOK CASE



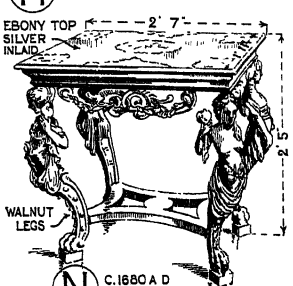
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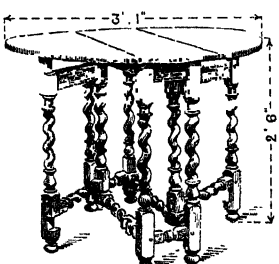
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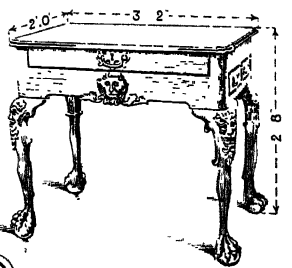
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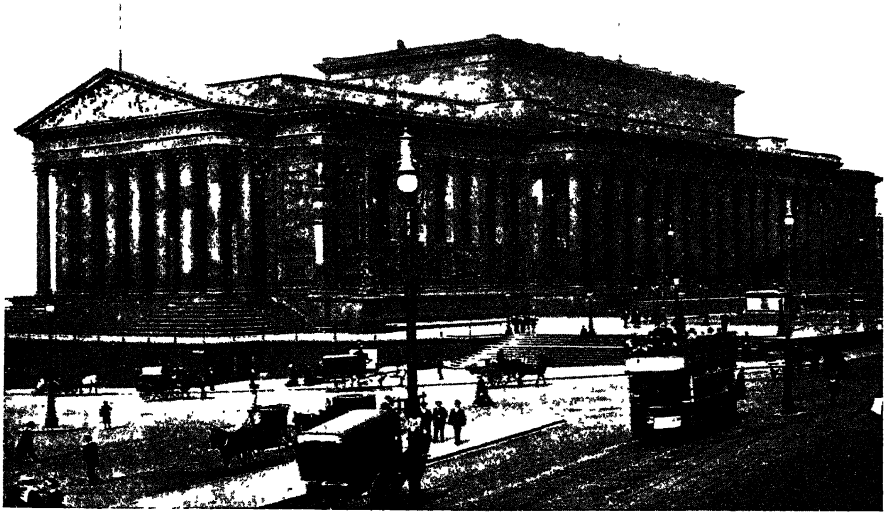
N C. 1680 A D
TABLE



P C. 1666 A D
WALNUT TABLE



Q MAHOGANY ARTISTS TABLE



A. S. George's Hall, Liverpool



B. Westminster Palace, London

THE CLASSIC SCHOOL

a portico serves its purpose as a sheltered meeting-place.

Professor C. R. Cockerell, R.A. (A.D. 1788–1863).—The Taylor Institution, Oxford (A.D. 1845); Sun Fire Office, Threadneedle Street, London (A.D. 1841) (altered); Buildings for the Bank of England at Manchester, Bristol (A.D. 1844), and Liverpool (A.D. 1845); Hanover Chapel, Regent Street (A.D. 1825), since demolished; Philosophic Institution, Bristol.

Sir Charles Barry (A.D. 1795–1860).—Travelled in Egypt, Greece, and Italy. He abandoned the fashion of useless porticoes and brought in the "astylar" treatment in design. The Travellers' Club, Pall Mall, London (A.D. 1830), after the Pandolfini Palace, Florence (p. 576); the Reform Club, Pall Mall (A.D. 1837), inspired by the Farnese Palace, Rome (p. 575); Bridgewater House, London (A.D. 1849), with fine internal court and staircase; Treasury Buildings (Whitehall façade), London (A.D. 1846); Town Hall, Halifax (A.D. 1862), which combines picturesqueness with symmetrical stateliness; Trentham Hall with admirable formal gardens; Highclere; Cliefden (A.D. 1851) and Clumber.

Sir James Pennethorne (A.D. 1801–71).—Assistant to Nash and influenced by Barry, also discarded porticoes. He followed Renaissance rather than Classic lines, and introduced the "Orders" sparingly. Geological Museum, Piccadilly (A.D. 1837–48); the Civil Service Commission Buildings, Burlington Gardens (A.D. 1866); Somerset House, Western wing (A.D. 1852); Record Office, Fetter Lane, in the Gothic manner—since enlarged.

E. M. Barry, R.A. (A.D. 1831–80).—Covent Garden Theatre; the Art Union Building, Strand; Charing Cross Station; the Temple Gardens, Victoria Embankment, London, in Early French Renaissance style.

F. P. Cockerell (A.D. 1833–78).—The Freemasons' Hall, London (A.D. 1866).

Philip Hardwick, R.A. (A.D. 1792–1870).—The Great Hall, Euston Station (A.D. 1847).

Sir Gilbert Scott, R.A. (A.D. 1810–77).—Government Offices, Whitehall, com-

THE GOTHIC SCHOOL

which, however, was slight; for it was the outcome of the idea to perpetuate the Tudor or last phase of English Gothic, but by the time this great building had reached completion, public interest in architecture was concentrated on still earlier Mediæval phases. Westminster Palace, on a site unequalled for historical associations, with its monumental plan and skilful grouping of external features—largely governed by the retention of Westminster Hall—remains one of the grandest and most imposing of modern buildings. The period of Sir Charles Barry marks the close of the Classic Revival, and Gothic influence was for a time paramount.

Philip Hardwick, R.A. (A.D. 1792–1870).—Hall and Library, Lincoln's Inn (A.D. 1843).

Sir Gilbert Scott, R.A. (A.D. 1810–77).—S. Giles, Camberwell; S. Mary, Stoke Newington; Martyrs' Memorial, Oxford; church at Haley Hill, Halifax (A.D. 1855); S. Nicholas, Hamburg (A.D. 1846–63); S. George, Doncaster (A.D. 1853); S. Mary's Cathedral, Edinburgh (A.D. 1874–79); S. Mary Abbotts, Kensington (A.D. 1869); Albert Memorial (A.D. 1862–72); S. Pancras Station; Glasgow University (A.D. 1866–70); Buildings in Broad Sanctuary, Westminster; many churches, houses, and restorations.

Benjamin Ferrey (A.D. 1810–80).—S. Stephen, Westminster (A.D. 1845); Dorset County Hospital (A.D. 1839).

William Butterfield (A.D. 1814–1900).—Keble College, Oxford (A.D. 1870); All Saints, Margaret Street (A.D. 1850), and S. Alban, Holborn (A.D. 1860), London, all of which show the use of colour decoration; restoration of S. Cross, Winchester.

G. E. Street, R.A. (A.D. 1824–81).—S. Mary Magdalene, Paddington; S. James the Less, Westminster (A.D. 1861); house in Cadogan Square; the Convent, East Grinstead; house and church at Holmbury S. Mary, besides numerous other churches. The Royal Courts of Justice, London (A.D. 1874–82), his greatest work, designed on an awkward site, was the last great attempt to apply the revived Gothic style to public buildings, for which this treatment proved unsuitable.

THE CLASSIC SCHOOL

prising the Home, Colonial, Foreign, and India Offices (A.D. 1860–75)—originally designed in the Gothic style, but owing to Lord Palmerston altered to a Renaissance treatment—with courtyard to India Office by Sir Digby Wyatt (A.D. 1820–77); this gave a severe blow to the Gothic style for public buildings.

Charles Barry (A.D. 1823–1900).—Dulwich College; Burlington House, Piccadilly (A.D. 1866) (with his partner, Banks).

Sydney Smirke (A.D. 1799–1877).—British Museum Reading Room (A.D. 1857); Carlton Club, Pall Mall (A.D. 1854), after the Library of S. Mark, Venice, but since altered.

Lewis Vulliamy (A.D. 1790–1871).—Dorchester House, London (A.D. 1851), after the Villa Farnesina, Rome (p. 575), with decorative work by Alfred Stevens.

John Gibson (A.D. 1819–92).—National Provincial Banks in London (A.D. 1863) and the provinces; the premises for the S.P.C.K., Northumberland Avenue, London (since altered); Todmorden Town Hall (A.D. 1870); Child's Bank, Fleet Street, London.

Sir Horace Jones (A.D. 1819–87).—Smithfield Market, Guildhall School of Music, and new Council Chamber, Guildhall, London (p. 398).

Capt. Fowke (A.D. 1823–65), ***General Scott*** (A.D. 1822–83) and Assistants.—Science College, South Kensington (A.D. 1872) and the Albert Hall, London (A.D. 1868).

W. H. Crossland, a pupil of Sir Gilbert Scott.—Holloway College, Egham, after Château de Chambord (p. 631); Rochdale Town Hall and Huddersfield Post Office.

John Whichcord (A.D. 1823–85). — S. Stephen's Club, Westminster, in French Renaissance Style; National Safe Deposit Building, London.

Davis and Emmanuel.—City of London School (A.D. 1883).

William Burn (A.D. 1789–1870).—Buccleuch House, Whitehall, and many mansions.

Alexander Thomson (A.D. 1817–75).—Known as "Greek Thomson." Buildings at Glasgow in revived Greek style.

H. Currey (A.D. 1820–1900).—S. Thomas's Hospital, London (A.D. 1868).

G. F. Bodley, R.A. (A.D. 1827–1907), ***and T. Garner*** (A.D. 1839–1906).—London

THE GOTHIC SCHOOL

W. Burges (A.D. 1828–81).—Cork Cathedral (A.D. 1870); Cardiff Castle (restoration); his own house, Melbury Road, London; the Speech Room, Harrow. Churches at Stoke Newington, Skelton, and Studley Royal.

R. Brandon (A.D. 1817–77).—Catholic Apostolic Church, Gordon Square, London (A.D. 1854).

E. W. Godwin (A.D. 1833–86).—Congleton Town Hall; Bristol Assize Courts and Northampton Town Hall.

A. Waterhouse, R.A. (A.D. 1830–1905).—Manchester Town Hall (A.D. 1868) and Assize Courts (A.D. 1864); Natural History Museum, South Kensington (A.D. 1879); Prudential Assurance Offices, Holborn; Eaton Hall, Cheshire; City and Guilds of London Institute, South Kensington; National Liberal Club, London (A.D. 1887).

Sir Thomas Deane (A.D. 1828–99).—The Oxford Museum (with Woodward) (A.D. 1855–60), the direct outcome of Ruskin's teaching, and unsuitable for its purpose; Meadow Buildings, Christ Church, Oxford.

Philip Webb (A.D. 1831–1915).—"Clouds," Hampshire; Palace Green, Kensington, for the Earl of Carlisle; offices in Lincoln's Inn Fields; many country buildings.

W. E. Nesfield (A.D. 1835–88).—A number of country houses, including Combe Abbey, Coventry, and smaller buildings, such as lodges at Kew and Regent's Park.

J. L. Pearson, R.A. (A.D. 1817–97).—Truro Cathedral; eight London churches: Holy Trinity, Bessborough Gardens (A.D. 1850); S. Anne, Lower Kennington Lane; S. Augustine, Kilburn; S. John, Red Lion Square, with chancel modelled on Cathedral of Gerona, Spain (p. 536 c); S. Michael and All Angels, West Croydon; S. John, Upper Norwood; Catholic Apostolic Church, Maida Hill; and S. Peter, Vauxhall. Chiswick Parish Church (additions); S. John, Redhill; S. Alban, Birmingham; Astor Estate Office, London; Westminster Abbey restoration.

James Brooks (A.D. 1825–1901).—S. John, Holland Road, Kensington; Churches at Plaistow, Stoke Newington, Hornsey, and Gospel Oak, besides many others round London.

THE CLASSIC SCHOOL

School Board Offices, Thames Embankment, in early French Renaissance style; the reredos, S. Paul's Cathedral.

H. Gribble (A.D. 1847–94).—The Oratory, Brompton (A.D. 1888–97).

W. Young (A.D. 1843–1900).—Glasgow Municipal Buildings (A.D. 1889); Gosford Park; War Office, Whitehall (A.D. 1906).

Leeming Brothers.—New Admiralty Buildings, Whitehall, won in competition, which practically sounded the death-knell of Gothic architecture for public buildings.

R. Norman Shaw, R.A. (A.D. 1831–1912).—New Zealand Chambers, Leadenhall Street, London; numerous country houses, as "Wispers," "Craigside," "Dawpool," and "Bryanston" near Salisbury; Lowther Lodge, Kensington; Alliance Assurance Office, Pall Mall; houses at Queen's Gate, Bedford Park (Chiswick), and Hampstead; Harrow Mission Church, Wormwood Scrubs, and the daring design for New Scotland Yard (A.D. 1891), which indicates the powerful personality of the man who perhaps influenced contemporary architecture more than any other single architect.

Sir Thomas Jackson, R.A.—Examination Schools and additions to colleges at Oxford in early Renaissance style.

Sir Ernest George, R.A., with his partners *Peto* and *Yeates.*—Houses in Collingham Gardens and Cadogan Square, London, which show the influence of Flemish Renaissance; houses at Streatham Common, Buchan Hill, Sussex, and elsewhere.

H. L. Florence.—Hotel Victoria, Holborn Viaduct Hotel, and Woollands premises, Knightsbridge, London.

E. R. Robson (A.D. 1835–1917).—Schools for the London School Board in a characteristic style with stock bricks and red dressings; Royal Institute of Painters in Water Colours and the People's Palace, London.

Sir Robert W. Edis.—Constitutional (A.D. 1886), Junior Constitutional, and Badminton Clubs, London.

T. E. Collcutt.—Imperial Institute (A.D. 1887–93); Palace Theatre; Wakefield Town Hall; Lloyd's Registry Office, London.

THE GOTHIC SCHOOL

Goldie (A.D. 1829–87).—S. James, Spanish Place, London; S. Wilfrid, York.

G. Gilbert Scott (A.D. 1837–97).—S. Agnes, Kennington (A.D. 1877); All Hallows, Southwark; S. John, Norwich; S. Mark, Leamington (A.D. 1879); additions to Pembroke College, Cambridge.

J. Oldrid Scott.—The Greek Church, Moscow Road, London; Selby Abbey restoration; the fine Church at Norwich, and many other churches.

Basil Champneys.—Girton and Newnham Colleges, Cambridge; Indian Institute (A.D. 1882) and Mansfield College, Oxford; S. Bride's Vicarage, London; Rylands' Library, Manchester; in the Georgian manner, Bedford College, Regent's Park.

G. F. Bodley, R.A. (A.D. 1827–1907), *and T. Garner* (A.D. 1839–1906).—Church at Hoar Cross, Staffordshire; Clumber Church; churches at Hackney Wick, Castle Allerton, Brighton, Cambridge, Pendlebury, Oxford, Leeds, Folkestone, Brentford, Kensington; college additions, Oxford and Cambridge; Washington Cathedral.

John F. Bentley (A.D. 1839–1902).—Roman Catholic Cathedral, Westminster (A.D. 1895–1903), a modern Byzantine church of monumental proportions with plan founded on that of Angoulême (p. 278), and with impressive brick interior, now gradually being lined with marbles and mosaics; Church of the Holy Rood, Watford; Jesuit College, Beaumont, near Windsor; S. Luke, Chiddingstone Causeway; S. Francis, Notting Hill; S. Thomas's Seminary, Hammersmith; S. Mary, Clapham, and many others, as well as buildings at Oxford and Cambridge.

Sir Arthur Blomfield, R.A. (A.D. 1829–99).—S. Mary, Portsea; All Saints, Brighton; Church for the Blind, Oxford Street, London, and many other churches; Sion College, Thames Embankment (A.D. 1886); the Church House, Westminster, and the Bank of England, Fleet Street, in the Renaissance style.

E. G. Paley (A.D. 1813–95), with his partner *Austin.*—Churches at Stockport and elsewhere in Lancashire; church at Bettws-y-Coed and other mountain churches.

THE CLASSIC SCHOOL

E. W. Mountford (A.D. 1856–1908).—Sheffield Town Hall (A.D. 1897); Battersea Town Hall and Polytechnic; Liverpool Technical Schools and Art Galleries; Central Criminal Court, London (A.D. 1905).

J. M. Brydon (A.D. 1840–1901).—Chelsea Town Hall and Polytechnic; Bath Municipal Buildings, Art Gallery, and Pump Room; Government Offices, Whitehall, London.

J. Belcher, R.A. (A.D. 1841–1913).—Colchester Town Hall; Institute of Chartered Accountants, and Electra House, Moorgate Street, London.

Sir Aston Webb, R.A.—Victoria and Albert Museum, London; Royal Naval College, Dartmouth; Buckingham Palace façade; Victoria Memorial, Processional Avenue, and Admiralty Arch, London (A.D. 1910).

H. T. Hare (A.D. 1860–1921).—Municipal Buildings at Oxford, Stafford, Henley, and Crewe.

Sir Edwin Lutyens, R.A.—Government Buildings, Delhi; Art Gallery, Johannesburg; S. Jude, Hampstead; Marsh Court, Stockbridge; Heathcote, Ilkley; New Place, Shedfield; Little Thakeham, near Pulborough, and many country houses; the Cenotaph, Whitehall.

Ralph Knott.—London County Hall, the most important recent public building, on a fine Thames frontage.

Sir Edwin Cooper.—Marylebone Town Hall; Port of London Authority Building; Lloyd's Headquarters.

Sir Herbert Baker, A.R.A.—Secretariat and the Legislative Building, Delhi; War Memorials at Harrow and Winchester; reconstruction of the Bank of England, London (p. 743).

Sir John W. Simpson, Lanchester, Lucas & Lodge, Sir John Burnet, R.A., J. S. Gibson, E. Guy Dawber, A.R.A., A. N. Prentice, and ***Sir Reginald Blomfield, R.A.,*** are other contemporary architects carrying on the traditions of the Classic School.

THE GOTHIC SCHOOL

J. D. Sedding (A.D. 1837–92).—Holy Trinity Church, Chelsea (A.D. 1890); Church of the Holy Redeemer, Clerkenwell (a new version of the Wren style); S. Clement, Bournemouth, and adjacent houses; Children's Hospital, Finsbury, and S. Michael, Shoreditch, London, and (in conjunction with H. W. Wilson) S. Peter, Ealing.

Sir Aston Webb, R.A.—Metropolitan Life Office, Moorgate Street, and French Church, Soho Square, London; and, with his partner, ***Ingress Bell,*** Birmingham Assize Courts (A.D. 1891) and Christ's Hospital, Horsham.

Ernest Newton, R.A.—Houses at Haslemere, Wokingham, and elsewhere.

Leonard Stokes.—Churches and Schools at Folkestone, Liverpool, and elsewhere.

W. D. Caröe.—Churches at Exeter, Fordington, and elsewhere; Bishops' Palaces at Bristol and Canterbury; besides a large number of church restorations.

G. H. Fellowes Prynne.—Churches at Staines, Dulwich, and elsewhere in a simple and restrained style.

Sir Giles Gilbert Scott, R.A.—Liverpool Cathedral (begun A.D. 1903) (p. 856 A), remarkable for double transepts, great north, south, and west entrances, its breadth of treatment externally (with boldly projecting buttresses), and the beautiful completed Lady Chapel. This notable building, the only Gothic cathedral designed for the Protestant faith, will be remarkable for its great central preaching space—the controlling feature of the original plan.

W. Niven, A. H. Skipworth, Temple Moore, Cecil Hare, W. Tapper, A.R.A., C. Harrison Townshend, Sir Chas. Nicholson, Prof. E. S. Prior, A.R.A., Hodgson Fowler, and ***H. P. Burke Downing*** are other contemporary architects carrying on the traditions of the free Gothic style.

A further account of present-day architects and a record of architectural tendencies and achievements during the last fifty years are to be found in the professional journals which give plans and details of the principal buildings. A perusal of these journals would seem to show that a style or manner in architecture is being worked out which will resist artificial revivals and passing fashions and become the free expression of our civilisation and the outward and material symbol of the twentieth century in England.

Architecture is now not confined to the land alone but finds its place in

the sumptuous apartments of ocean-going palaces, and also is increasingly applied to the internal fittings of the vessels of the air.

There is no doubt whatever that the great World War (A.D. 1914–19) through which we have passed will influence every aspect of human life and affect the character of modern architecture. It is difficult at the moment to point out the exact nature of this influence, except to say that the happiness, comfort, and well-being of the great mass of the community has now become a predominant factor in determining the direction of future architectural developments.

ARCHITECTURE OF THE BRITISH DOMINIONS

Architecture in the British Dominions has kept pace with their progress and development, adapting itself to growing public needs, and, as in the Mother Country, a modified Renaissance style is general for civic and secular buildings and Gothic for ecclesiastical.

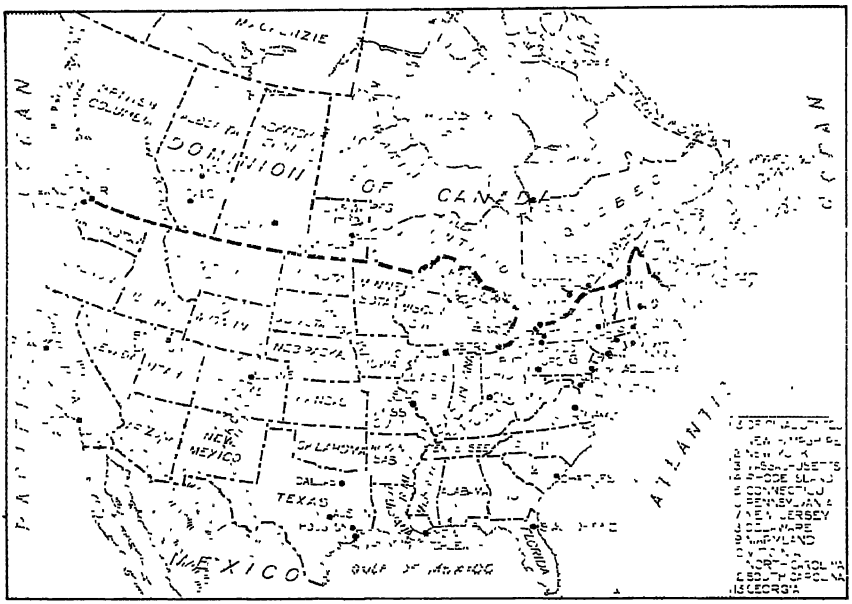
In **Canada** there are in the Renaissance style the MacGill University and the New Art Gallery at Montreal: Parliament Buildings at Quebec and Winnipeg; the Bank of Montreal, Winnipeg, and the Union Station at Toronto. The Parliament Buildings, Ottawa, are in the Gothic style, while Toronto University, in various styles, has recently received an interesting Gothic extension, known as Hart House. Town-planning has resulted in a comprehensive scheme for a Federal Capital at Ottawa, and a Civic Centre is proposed for Vancouver.

South Africa provides an instance of the chance given to architecture by the forceful character of one man. Cecil Rhodes went out there with high ideals in which architecture had its due place. Who does not know, if only in pictures, " Groote Schuur " on Table Mountain, the beautiful home of Rhodes, and now the residence of the Prime Minister of the Union of South Africa? Sir Herbert Baker, A.R.A., had his chance and designed the Union Buildings, Pretoria, the Cathedrals of Pretoria, Cape Town, and Salisbury, besides much fine domestic architecture into which he wove the note of the old Dutch farmhouses. There are also from his designs the Rhodes Memorial and the Siege Memorial, Kimberley. Here, then, as in older countries, history and progress are recorded in enduring stone, and the legislature is represented in such buildings as the New Law Courts, Cape Town, by Hawke and McKinlay.

In **Australia** and **New Zealand** there is much building activity, which is exemplified in the Parliament House and other public buildings in Melbourne, which are Renaissance in style, while Melbourne Cathedral and other churches are Gothic. Town-planning is not neglected, and the Federal Capital Canberra will probably rank as one of the world's finest cities.

The most successful of all architectural developments in the British Dominions is seen in the country houses resembling the Georgian Architecture in England, or the old Dutch farmhouse style in South Africa, adapted to suit varying climatic conditions and freer social customs.

A comprehensive idea of the progress of the Empire's building activity can be obtained by reference to the illustrated architectural journals which indicate that a style, adapted to modern needs, is being evolved. These form a material record of modern life in the great self-governing Dominions, which not only carry on British traditions, but also display, even in their architecture, that essential characteristic of our race, the power of adaptability to new conditions in new countries, whether amid northern snows or under the southern sun.



THE UNITED STATES AND CANADA

ARCHITECTURE IN THE UNITED STATES OF AMERICA

ANY notice of American architecture here must necessarily be of a suggestive rather than of a descriptive nature, for the architecture of that great country, with all its daring originality and with its many ramifications, would require a volume to itself. The progress of architecture in a new country, where it might be supposed to be untrammelled by tradition and by conditions obtaining in Europe, must be of unusual interest. European tradition, however, has had an insistent influence, although developments have taken place on somewhat independent lines, often strangely similar to and often widely different from those prevailing in countries with an older civilisation. American architecture before the Civil War (A.D. 1861–65), adapted from the Georgian style in England and known as Colonial, including the architecture of the original Colonial districts before the period of the Greek revival, shows, especially in New England and the Southern States, a distinct type of country house, with all the pleasant appointments and surroundings necessary for the administration of large estates. Architecture in the Northern States, which received a great impetus from the conditions following the Civil War, is of a more pronouncedly modern, commercial, and utilitarian type, and has been developed, even on the domestic side, along distinctly individualistic lines by architects who had made a study of past styles with a view to adapting them to modern require-

ments. It is evident that such a rapid development in architecture does not demand the same exhaustive treatment and analysis as has been applied to the architecture of slow growth and evolution in old European countries on which that of the New World is founded.

In the New England States wood was naturally the material originally employed, and largely determined the character of the old Colonial dwelling, which was a frame-house of posts and beams covered with boarding, usually with the addition of a verandah, and this type remains the vernacular building of the United States (p. 779 B, E, F). Craigie House, Cambridge (A.D. 1757) (p. 779 F), famous as being the home of Longfellow, is a typical Massachusetts house, with Ionic columns, shuttered sash windows, hipped roof, and dentil cornice; while the internal fittings resemble those by Adam and Sheraton. Porches and entrance doorways in these houses (p. 779 A, B, C) were designed in the manner of those of the Georgian period in England. Where an Order was introduced, the columns were frequently of very slender proportions suitable to the material of which they were constructed, and, in such features as verandahs and porticoes, were often very attenuated, but nevertheless effective (p. 779 B, E). In Virginia and Maryland, the homes of the tobacco-planters, many of the most delightful and commodious houses were erected in the adapted Georgian style, and the influence of Sir William Chambers is perceptible.

Among the early churches or "meeting houses," erected in the manner of Sir Christopher Wren, are Christ Church, Philadelphia (A.D. 1727), S. Philip, Charleston (A.D. 1733), S. Paul, New York (A.D. 1767), and S. Michael, Charleston (A.D. 1752), of which the probable architect was Gibbs, the designer of the Radcliffe Library, Oxford. King's Chapel, Boston (A.D. 1747), was by Harrison, a pupil of Vanbrugh. Independence Hall, Philadelphia (A.D. 1735), and the Town Hall, Newport, are typical and significant public buildings of which Americans are justly proud.

The Spanish rule in Florida till A.D. 1821, and in California till A.D. 1848, was responsible for many military forts, Roman Catholic churches and mission houses, which resemble Spanish Renaissance buildings.

After the Declaration of Independence (A.D. 1776), and owing to the erection of the new State Capitols, a more monumental type was evolved suitable for public buildings, but among those of importance a few only can be mentioned, such as: The Capitol, Washington (A.D. 1793–1830), by Thornton, Hallet, and Latrobe; Virginia University (A.D. 1819–26), by Jefferson, recently destroyed by fire and rebuilt in a similar manner by McKim, Mead, and White, and the Massachusetts State House, Boston (A.D. 1795), by Bullfinch, recently enlarged and restored.

The "Classic Revival" during the nineteenth century in Europe, largely owing to Stuart and Revett's publications, also reached America during the first quarter of the nineteenth century, and there produced similar results to those in England and remained a force till the Civil War. Among the buildings were the wings and dome of the Capitol, Washington (A.D. 1858–73), by Walter, which became the model for many public buildings; the Girard Bank, Philadelphia (A.D. 1795), by Latrobe; the Custom House, New York; the United States Mint, Philadelphia, by Strickland; Girard College, Philadelphia (A.D. 1833), by Walter; the Treasury, Washington; Boston Custom House; the Town Hall, Philadelphia; the Capitol, Albany (A.D. 1871), and other State Capitols.

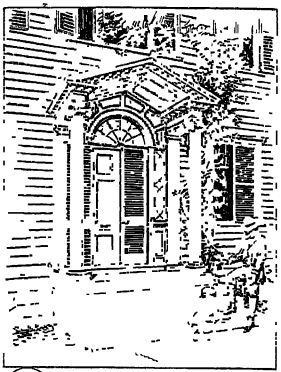
The "Gothic Revival" is seen principally in churches, such as Trinity

Church, New York (A.D. 1839), by Richard Upjohn, the pioneer of the movement; Grace Church (A.D. 1845), and S. Patrick's Cathedral, New York (A.D. 1858), both by Renwick; the State Capitol, Hartford (A.D. 1873), by R. M. Upjohn; the Museum, Boston (A.D. 1876); the Academy of Fine Arts, Philadelphia (A.D. 1876), and Memorial Hall, Harvard College (A.D. 1870). The influence of the Gothic revival is seen throughout the American continent and lasted till about A.D. 1875.

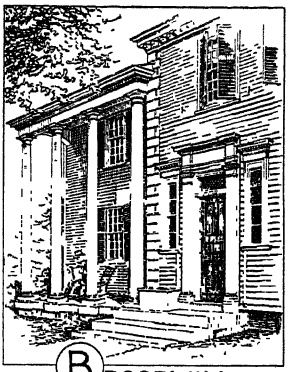
The industrial activity which followed the Civil War (A.D. 1861–65) and the devastating conflagrations at Chicago (A.D. 1871) and Boston (A.D. 1872) all helped to concentrate public interest on architecture and on novel methods of construction. H. H. Richardson (A.D. 1826–86), although a pupil of the École des Beaux-Arts, Paris, was a strong individualist and worked in the non-academic Romanesque manner, and greatly influenced his contemporaries and successors. Amongst his works are Trinity Church, Boston (A.D. 1877), with central tower adapted from Salamanca Old Cathedral (p. 537 F), and a number of town halls, schools, and houses, including Pittsburg County Buildings (A.D. 1884), the Albany City Hall, additions to Harvard University, and many charming small libraries round Boston. R. M. Hunt (A.D. 1827–95), one of the first Americans trained at the École des Beaux-Arts, Paris, introduced into America the modern type of French architecture, which now came into favour in place of the English tradition. He erected many large town and country houses, among which may be mentioned houses at Newport and Bar Harbour, and at such resorts as Lenox and Tuxedo. Newport, owing to the variety of the architecture employed in its palatial buildings, has been said to have more of the aspect of an architectural museum than any other American town. "Biltmore," a country château in North Carolina, was designed by Hunt, as were also many city buildings, including the Lennox Library, New York (A.D. 1871), and additions to the Metropolitan Museum of Art, New York. Among later public buildings of note are S. John the Divine, New York (A.D. 1892); President Grant's Mausoleum, New York (A.D. 1891); Chicago Public Library, by Shepley, Rutan, and Coolidge; Congressional Library, Washington, by Petz, Smithmeyer, and Green; New York Public Library (A.D. 1897–1910), by Carrère and Hastings; the State House, Providence, by McKim, Mead, and White; University of Pennsylvania, Philadelphia, by Cope and Stewardson; Libraries at Washington and Atlantic City by Ross and Ackermann; the Ponce de Leon Hotel, Florida, in the Spanish Renaissance style by Carrère and Hastings. Boston Public Library, a modern Renaissance design by McKim, Mead, and White, has influenced recent library plans; while the same architects have erected buildings, scholarly in design, at the Columbia University, the Municipal Buildings, and Pennsylvania Station, New York, where the vast waiting hall is based on the Baths of Caracalla, Rome.

The various buildings in the Exhibitions at Philadelphia (A.D. 1876), Chicago (A.D. 1893), and S. Louis (A.D. 1904) have aided in enlarging the national ideas as to the place of architecture in national life. They differed largely, however, from expectation; for, instead of new developments in iron, terra-cotta, or timber, the temporary buildings in these exhibitions were designed in the modern French Renaissance style.

The abnormal progress of American industries during recent years, the general use of elevators and of fire-resisting construction, together with the high price of land, have caused many important town buildings to be carried to a great height. In some the walls have been constructed of a framework



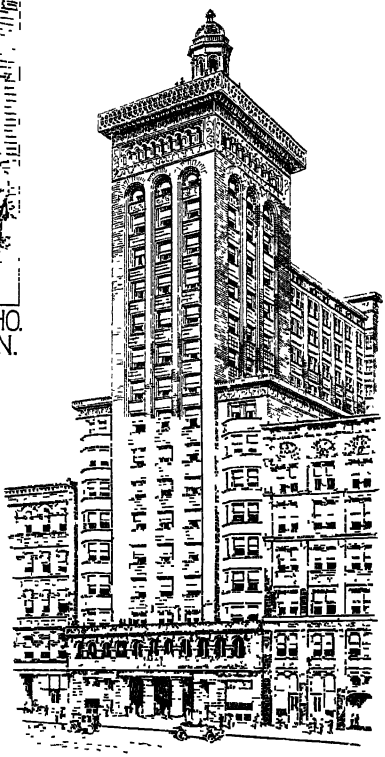
A PORCH: BRISTOL HO. NEW HAVEN: CONN.



B DOORWAY LITCHFIELD: CONN.



C DOORWAY DEERFIELD



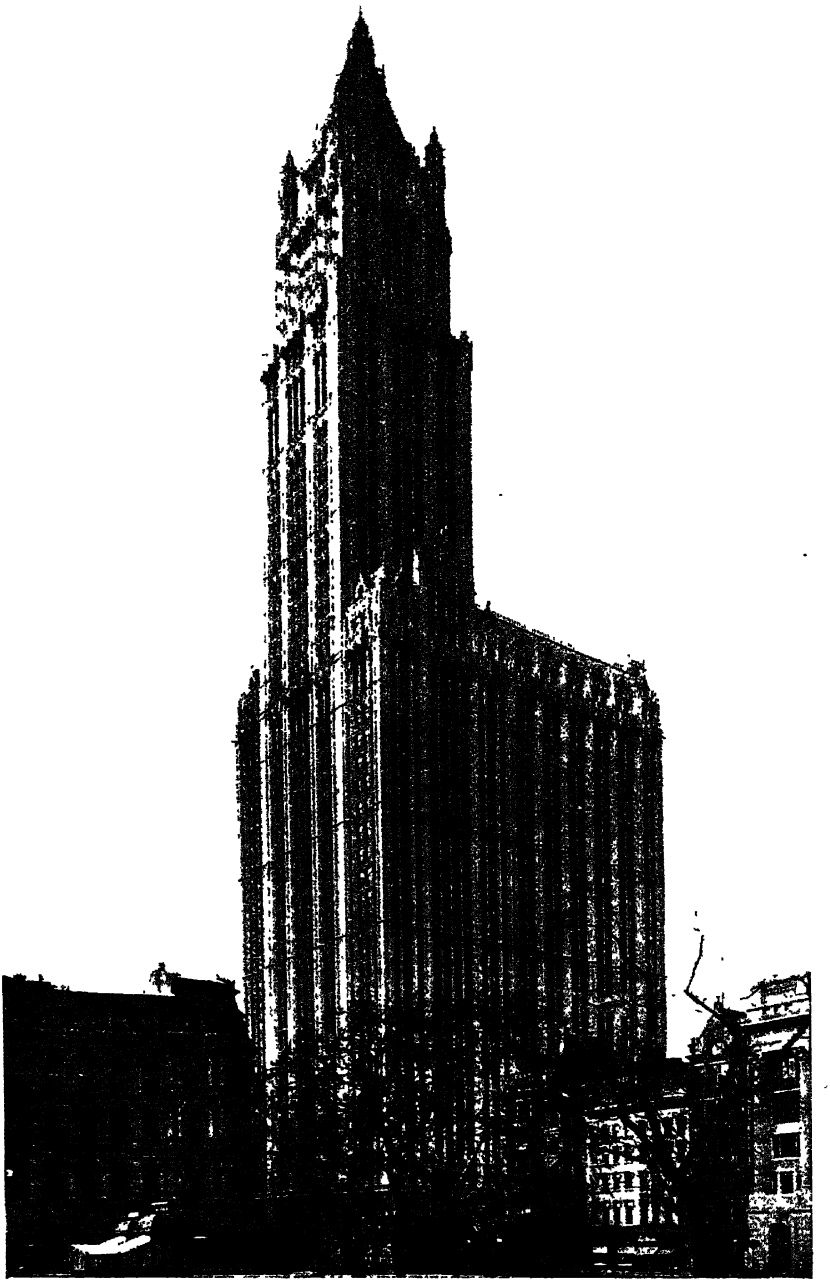
D GARRICK THEATRE: CHICAGO



E HOUSE LITCHFIELD: CONN.



F CRAIGIE HOUSE: CAMBRIDGE: MASS.



WOOLWORTH BUILDING, NEW YORK

of steel supporting masonry, brick, or terra-cotta. Such buildings, introduced about A.D. 1890, are essentially modern in character, but not necessarily ugly in design. Among the most important are the Garrick Theatre, Chicago (p. 779 D), by Adler and Sullivan, a most successful design as applied to a high building, which is in reality a tower; the Monadnock Building (sixteen storeys), and Masonic Temple (eighteen storeys), Chicago, by Burnham and Root; the Ames Building, and Tremont Temple, Boston; Madison Square Tower, New York, and offices for newspapers, insurance companies, and trusts.

Besides all these and many more, Carrère and Hastings, and lately Mr. Hastings alone, have carried out a number of great buildings, including the Standard Oil Company's Central Building, Century and Globe Theatres, Manhattan Bridge, United States Rubber Building, and Knoedler Building, all in New York, as well as the National Amphitheatre, Arlington Cemetery, and Guggenheim Residence, New Jersey.

The Bush Terminal Building, New York, by Helmle and Corbett, is one of the most successful of the many-storeyed buildings of America, while the Scottish Rite Temple, Washington, by J. Russell Pope, is perhaps the finest masonic temple in the world.

The Woolworth Building, New York (A.D. 1911–13) (p. 780), by Mr. Cass Gilbert, is one of the latest and most complete examples of high building design. It is a steel frame structure faced with stone and decorated with carving in a free treatment of Gothic. The main building has 31 storeys and is 400 ft. high. The tower has an additional 29 storeys, *i.e.*, 60 in all, with a total height from the pavement of 800 ft., or well over twice the height of S. Paul's Cathedral, London. The building has 26 lifts, 4 fire-escape stairways, and special provisions have been made against fire. A restaurant, shops, Turkish baths, and swimming baths, besides suites of offices, are comprised within the building, which is occupied by over 10,000 people.

These "skyscrapers" of American commercial cities are the last word in utilitarian construction, and are striking examples of the operation of the accepted principle that site, purpose, and material must control the design.

Houses, large and small, are among the most satisfactory buildings both in town and country. House plans thus often show great originality, with staircases, loggias, and steep roofs as the main features. The trend of modern architecture is indeed well seen in the rapidly increasing number of houses surrounded by formal gardens which approximate to those of England, and with inevitable modifications which result from the incorporation of the latest systems of sanitation, heating, lighting, and every sort of labour-saving appliance dictated by the natural desire of an enterprising race for completeness, as well as by the prevailing social conditions which necessitate the reduction of manual labour in the service of the house.

It is a matter worthy of note that in America, and within the limits of the last three centuries, are to be found the most striking architectural contrasts in the world. There seems indeed to be no visible kinship between the old colonial country house of the Southern States, which spreads easily and lazily along the ground, and the modern commercial building of the Northern States, which, rising from its limited site, aggressively pierces the sky. The older country mansions of the South—

> "Built in the old Colonial day,
> When men lived in a grander way"—

still stand as symbols of a life which was on a grand scale for the few but based on the slavery of the many. This whole social system was swept away in the Civil War by the energetic sons of the North. They were not proprietors of landed estates, but they owed everything to their own energy and initiative in industrial enterprise. This new life is, in its turn, well typified in the steel-built, sky-challenging structures of Chicago and New York.

Town-planning schemes for the well-nigh unlimited sites in America are on a much bolder plan than was possible under restricted conditions in England. Washington was laid out with great skill in the grand manner from L'Enfant's plans, and town-planning schemes have been adopted in New York, Philadelphia, Buffalo, Chicago, San Francisco, and many other cities and rising townships of the States, while some of the limiting conditions which prevail in England may still be seen in the older part of Boston.

In these pronounced architectural contrasts we realise with even greater clearness than usual that architecture is at once the reflection and exponent of the period of which it is the product. There is great scope for architecture in America if architects express themselves in the language of their own times, for no advance can be made by the mere reproduction of ancient buildings, as has been done in certain cases, constituting a retrogressive movement and showing a want of appreciation of the true mission of art. The great historic styles must of course be well studied, not only for the outward forms and features, but also for the principles of construction on which they are founded, much in the same way as the standard literature of the past lays the foundation of good literary style. Thus will the architect produce buildings reflecting the hopes, needs, and aspirations of his age and generation. American architects, many of whom are first trained at the École des Beaux-Arts, Paris, have already advanced rapidly along new lines of adapted design, and have, in their various buildings, displayed that peculiar American freedom of character and outlook which enables them unconsciously to cut their way straight to the particular types of design most suitable for the wide variety of purposes, whether commercial, industrial, social, educational, municipal, religious, or domestic, of the up-to-date and untrammelled citizens of America. It is indeed only natural that the great country of the West, which was founded in religious freedom, and was later established in political freedom, should to-day hand on the torch of freedom, not only in religion and politics, but also in literature and art.

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END OF PART I

A

HISTORY OF ARCHITECTURE

ON THE

COMPARATIVE METHOD

PART II

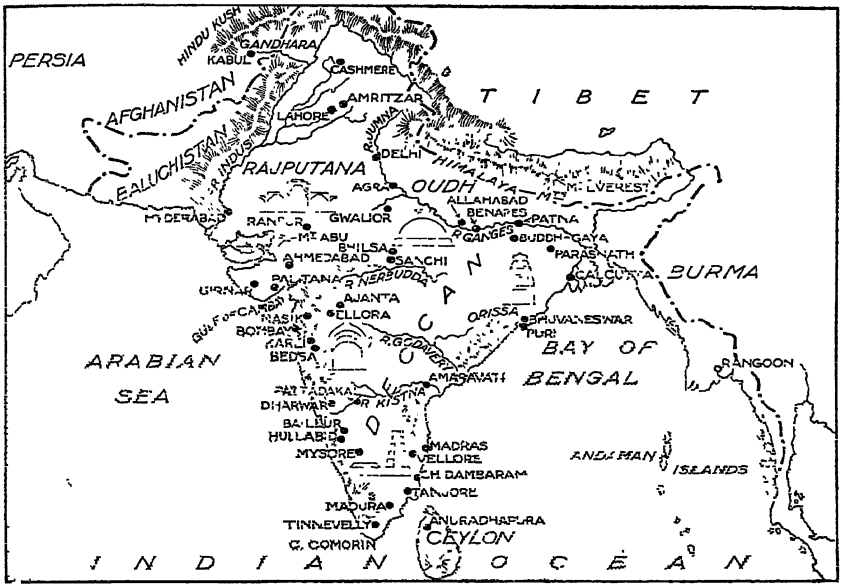
THE NON-HISTORICAL STYLES

PART II

THE NON-HISTORICAL STYLES

GENERAL INTRODUCTION

A HISTORY of the world's architecture would be incomplete if we did not pass in review not only those allied and progressive styles which we have designated as Historical, but also those other styles—Indian, Chinese, Japanese, Central American, and Saracenic—which remained detached from Western Art and exercised little direct influence on it, and which we therefore term Non-Historical. Saracenic art, however, through the agency of the Moorish occupation of Spain, has left its indelible imprint on the architecture of that country. Egyptian and West Asiatic Architecture have been included among the historical styles, because they influenced the architecture of Greece and therefore of all subsequent historical styles. Fergusson, who was the first to piece together the story of Eastern architecture, utilised the vast amount of material brought to light by General Cunningham and others, who had been working mainly in connection with Indian government departments, and the chronology founded on these investigations is here adopted. Eastern art presents many features to which Europeans are unaccustomed, and which therefore often strike them as unpleasing or bizarre ; but it must be remembered that use is second nature, and, in considering the many forms which to us verge on the grotesque, we must make allowance for that essential difference between East and West which is further accentuated in purely Eastern architecture by those religious observances and social customs of which, in accordance with our usual method, we shall take due cognisance. These non-historical styles can scarcely be as interesting from an architect's point of view as those of Europe, which have progressed by the successive solution of constructive problems, resolutely met and overcome ; for in the East decorative schemes seem generally to have outweighed all other considerations, and in this would appear to lie the main essential differences between Historical and Non-Historical architecture.



INDIA

INDIAN ARCHITECTURE

1. INFLUENCES

i. Geographical.—India, a great triangular peninsula of Southern Asia, covering an area fifteen times the size of Great Britain, is bounded on the north by the Himalaya Mountains and their lateral spurs, and on east, west, and south by the sea. By reason of her geographical position, India in the earliest times received the overflow of the ancient races of Central Asia, and thus was chiefly influenced from the north; more especially because the absence of good harbours along her coasts did not tend to promote intercourse by sea. The great rivers Ganges, Indus, Nerbudda, Kistna, and Jumna afforded employment to thousands of boatmen, and were utilised for rafting down building-timber from the immense forests; while cities naturally sprang up on the banks of rivers which were trade routes and highways, and thus the Ganges-Jumna Valley contains some of the principal cities of architectural importance. Delhi, the "Rome of India," covering nearly fifty square miles, was the capital of the Mogul Emperors (p. 850), and its importance was undoubtedly due to its commanding position at the junction of the four historic roads from the Lower Ganges, the Hindu Kush, the Indus Valley, and the Gulf of Cambay. Delhi is the centre of India, as London is of England, and after having been in succession the capital of Hindu, Mahometan, and Mogul Empires, it has now recently been created the capital of the Empire of India. On the Western Ghâts along the coast-line there are rock-cut temples, which in their capitals and columns suggest the influence of Egypt, Persia, and Assyria. The Greek Bactrian Kingdom in the north-

west had considerable influence on the architecture, primarily of the Gandhara district, whence it spread over Northern India. The comparatively open country on the east coast was more accessible to civilisation, so that the ancient dynasties of Southern India fixed their capitals there, rather than on the west coast, where there is only a narrow strip of lowland between the Ghâts and the seaboard, so that the inhabitants remain, even to this day, aloof from civilising movements. The map (p. 785) with its diagrams taken from Choisy's " Histoire de l'Architecture," indicates the different type of building characteristic of each district of India.

ii. Geological.—The excellent building stone in the centre of the peninsula, and in the hill country generally, influenced Indian architecture from the earliest times. The famous pink marble of Rajputana, used in the buildings at Delhi and Agra, the " trap " and granite of the Deccan, the sandstone of certain districts, and the volcanic potstone of Hullabîd, all contributed to develop those characteristics which are peculiar to the different localities. In Western India the rock-cut " Chaityas " of the Buddhists were produced in the actual geological formation ; for they were carved in the horizontal strata of the living rock, where it rises sheer from the ground in perpendicular cliffs. At Mahavellipore and Ellora, the Dravidian rock-cut temples, known as " Raths," were hewn out of the amygdaloidal trap formations. Teak, the principal timber of the country, is found on the Eastern and Western Ghâts, and in the Himalayas ; while besides ebony and bamboo there are the palms, which grow mostly on the lowlands of the coast, and supply food, drink, clothing, and building material to the natives. In the low-lying plains of Bengal, the alluvial soil was the only material available for building, which, made into bricks, was used extensively in this district. Terra-cotta seems to have been employed in early times, and the ease with which plastic clay was pressed into moulds may be responsible for some of the exuberance of ornament in later periods. Lime for building was obtained by burning limestone, shells, and kankar, a nodular form of impure lime found in river valleys.

iii. Climatic.—India lies mostly within the tropics, and two principal seasons, wet and dry, divide the year. Here, as in Egypt, Assyria, and Persia, flat terraced roofs for coolness, exercise, and sleeping are the rule. The use of the great fan, or punkah, is an indication of the intense heat, which influenced the size and treatment of architectural openings ; thus the pierced screen or lattice window, which is so characteristic a feature of Indian as of all Eastern art, was designed to exclude the light and heat caused by the constant sunshine. Canals, reservoirs, and tanks, which are conspicuous in connection with the plans both of temples and palaces, were necessary for irrigation and water-storage during the dry season.

iv. Religious.—The Early Vedic religion, of which the " Rig-Veda "—a collection of poems addressed to the gods—forms the literary memorial, and had existed in the sixth century before our era, long before the rise of Buddhism.

Buddhist.—Gotama or Buddha, the " Enlightened " (B.C. 623–543), who, from the age of thirty-five, spent his life in preaching his new-found faith, was the founder of Buddhism, the religion which was the first great bond of union among the Indian races. The Emperor Asoka (B.C. 272–227) adopted Buddhism, and made it the state religion, as Constantine did with Christianity in the West, and so it remained for nearly a thousand years till A.D. 750. To his reign can be traced the historical architecture of India,

an architecture of religion, in which, however, sacred buildings were originally not temples to gods, but monasteries or memorial shrines to holy men. The great Buddhist monastery of Nalanda, south of Patna, accommodating 10,000 priests, existed for the first five hundred years of our era, and corresponded to the European monasteries of the Middle Ages, attracting and disseminating all the learning of the age. The Chinese pilgrims to India in A.D. 400 and A.D. 630 have left interesting descriptions of their visits to this and other buildings. The tenets of Buddhism are inscribed on monuments at Buddh-Gaya, Bharbut, and on "topes" and gateways at Sanchi and elsewhere. Relic worship, which was an essential feature of the Buddhist religion, necessitated the erection of "topes" or "dagobas" to contain relics of saints. The non-Aryan peoples of India introduced tree and serpent worship, which is responsible for many decorative emblems, such as seven-headed serpents, and the celebrated "Bo-Tree" at Anuradhapura, Ceylon, has been worshipped for over two thousand years.

Jaina.—This religion, which seems to have been founded on Buddhism, rose to importance about A.D. 1000, and a statue of one of the twenty-four Jinas or saints, with its distinctive sign, such as a bull, elephant, monkey, crocodile, rhinoceros, or lion, is placed in each temple. The extraordinary number of image cells, 236 in one building, has led to the supposition that the Jains believed the particular saint to whom the temple was dedicated was honoured in direct ratio to the number of his statues. They also regarded temple-building as a virtue, ensuring a happy future state, and this led to the endowment of temples by private individuals. These buildings are conspicuous by numbers rather than by architectural importance.

Hindu.—The Modern Hindu religion, generally known as the Brahmanical, from the name of the priestly order, dates from about A.D. 750. It was a joint product of the Vedic cult, Buddhism, and Brahmanism, and was, in reality, a social league resting upon caste, a complicated system of division of the people according to race, occupation, and geographical position. The Hindu or Brahmanical religion broadly divided the community into castes, viz.: (*a*) Brahmans, or priests, lawgivers, poets, and scientists; (*b*) Rajputs, or landowners and soldiers; (*c*) Vaisyas, or Aryan agricultural settlers and craftsmen; (*d*) Sudras, or serfs. Each caste became, as it were, a trade guild to whose care were entrusted the manufactures, decorative arts, and working in precious stones. There were few tombs built in this period, for the Brahmanical doctrine of the transmigration of souls did not encourage tomb-building. Monastic life had ceased with the decay of Buddhism, and therefore monasteries were replaced by hypostyle halls, which sheltered pilgrims, and there were sacred lakes occasionally surrounded by porticoes.

The Mahometan religion and the forms in architecture to which it gave rise in India are considered under Indian Saracenic (p. 831).

v. Social.—The peoples of India consist of (*a*) the Non-Aryan tribes or aborigines; (*b*) the Aryan or Sanskrit-speaking race, which includes Brahmans and Rajputs; (*c*) Hindus, a mixed population formed of the above; (*d*) Mahometan invaders. These races have really never amalgamated, but have become mixed in varying degrees, and have always remained subject to the unchanging conditions which characterise the East. The chief dividing lines are those of religion and caste, rather than of race and language, and this has naturally produced an architecture which shows little progressive development; while there is diversity and absence of unity between the different styles in this vast peninsula. The tenure of land by feudal princes

produced enormous revenues which were largely spent in the erection of religious monuments for self-gratification. Among the most intellectual class, the spiritual and contemplative aspects of life overshadowed the practical and political, and even influenced architecture, as is seen in the avoidance of constructive problems. Architecture, like other records of events, is silent from the expiring years of Buddhism (A.D. 750) to the commencement of the eleventh century. The " Mahawanso " of Ceylon, however, a series of rock inscriptions, forms a historical record of that island from B.C. 250. The subordination of human personality under the caste system, which divided people into communities rather than into families, was not favourable to domestic architecture, which remained in a rudimentary state. The Sanskrit grammar of Panini, compiled about B.C. 350, is still the foundation of the study of the Aryan language. The epic poems known as the " Mahabbarata " or chronicles of the Delhi Kings up to B.C. 1200, and the " Ramayana," or story of the Aryan advance into Southern India about B.C. 1000, are works by the Brahmans that may be compared to Homer's " Iliad " and Virgil's " Æneid." Sir W. Hunter's " Brief History of the Indian Peoples " forms an excellent *résumé* of Indian art and life.

vi. **Historical.**—Alexander's conquests in North-West India (B.C. 327) (p. 67) brought that country into touch with European and West Asiatic art ; thus Greek, Assyrian, and Persian influences are apparent in the architectural detail of that region. The Greek Bactrian Kingdom (B.C. 323–130), which, along with India, fell to Seleukos Nikator, one of Alexander's generals and founder of the Syrian monarchy, exercised considerable Classical influence over Northern India. From the time of Alexander to the time of Vasco da Gama (A.D. 1498) Europe had little direct influence on the East. The Tartar or Scythic inroads from B.C. 126 to the fifth century of our era succeeded those of the Greeks. The Mahometan invasion, in the thirteenth century, led to the adoption of Saracenic features, thus producing an Indian version of that style. From A.D. 1746 British rule in India was being consolidated, until in A.D. 1858 the annexation to the British Crown was effected by Royal proclamation, a historic event which has still further promoted an intermingling of European and native art. The selection of Delhi as the capital of the Indian Empire has given an opportunity for English and native talent to produce public buildings in accord with Oriental surroundings and suitable for their Imperial purpose.

2. ARCHITECTURAL CHARACTER

Indian architecture is divided into the following periods, which, however, frequently overlap :

(1) The Buddhist style (B.C. 250—A.D. 750). India (north of the Deccan) and Ceylon.

(2) The Jaina style (A.D. 1000—1300) with later revivals. The whole of India from the Himalayas to Cape Comorin.

(3) The Hindu (or Brahman) style, subdivided into (*a*) The Northern Hindu style in North India (A.D. 600 to the present time). (*b*) The Chalukyan style in Central India (A.D. 1000–1300). (*c*) The Dravidian style in South India (A.D. 1350–1750).

(1) ***Buddhist Architecture.***—The appearance of structural temples, of which none are left, can only be conjectured from that of the rock-cut

temples, which, however, have only one façade, cut in the face of the rock. This architecture, which is, therefore, mainly internal, is interesting as showing an imitation of timber forms, which were repeated long after their *raison d'être* had ceased (cf. Greek Architecture, p. 78). With the exception of the façade, ornament was lavished on internal columns and roofs, the former of which were short and overladen with ornament, while the latter were generally semicircular, treated with ribs showing a timber derivation (p. 795).

(2) *Jaina Architecture.*—The style is generally regarded as being founded on Buddhist architecture ; the monuments are mainly religious and mostly belong to the great age of Jaina architecture (A.D. 1000–1300), and are found in all parts of India, especially in the north. Temples have an entrance porch or hall, generally cruciform on plan, and columns with bracket capitals and angular struts which support domes often of various heights and invariably built in horizontal courses of stone, which, exerting no lateral thrust, are supported on columns without the aid of buttresses (p. 792 B). The interior thus presents a light and graceful character, further enhanced by the method of planning of an " in and out " or cruciform shape (p. 796 B). Then comes a small square " vimana " or idol-cell, containing the cross-legged seated figure of the saint. It is lit only from the door, and crowned with a " sikra " or imposing pyramidal storeyed tower, with curvilinear sides in receding stages recalling the Chaldæan ziggurats. Sculptured ornament of grotesque and symbolic design, bewildering in its richness, covers the whole structure, leaving little plain wall surface and differing essentially from European art. The temples were picturesquely perched on mountain tops or nestled in secluded valleys, as the Jains set a high value on the effect of environment on architecture. The larger temples are enclosed by a wall, along the inner side of which are the numerous image-cells which open on to the internal court. A revival of the style took place in the fifteenth century, corresponding to the Renaissance in Europe. Modern Jaina temples are mostly tinged with Mahometan influence and have bulbous domes and foliated pointed arches, while the " sikra " or pyramidal tower is often absent.

(3) *Hindu (or Brahman) Architecture.*—This varies in its three local styles, but all have the small " vimana " or shrine-cell and entrance porch, with the same excessive carving and sculpture, which are impressive as offering a tribute of labour to the gods. The principal Brahman temples, like those of Egypt, show successive additions of sanctuaries and enclosures grouped around or attached to the original shrine. The grandeur of their imposing mass produces an impression of majestic beauty, but the effect depends almost wholly on elaboration of surface ornament, rather than on abstract beauty of form, in strong contrast to Greek architecture. In other respects the styles differ according to locality as follows : (*a*) The Northern Hindu differs from the Dravidian in that the pyramidal roof over the " vimana " is curved instead of stepped in outline and the entrance porch has no columns. (*b*) The Chalukyan is affected by its northern and southern rivals, and takes features from both without losing its special character. The star-shaped plans (p. 792 J) contrast with the cruciform plans of the Northern Hindu style ; while the curved pyramidal towers contrast with the storeyed Dravidian towers. (*c*) The Dravidian has the " vimana " crowned by stepped pyramids, each storey of which is ornamented with cells. The " gopuras " or gateways to temple enclosures recall the pylons of Egyptian façades (p. 22), and the " choultries " or columned halls are akin to Egyptian hypostyle halls (p. 22).

3. EXAMPLES

(I) BUDDHIST ARCHITECTURE

(B.C. 250—A.D. 750)

The monuments can be divided into :—1. Stambhas or Lats. 2. Topes or Stupas. 3. Rails. 4. Chaityas. 5. Viharas.

1. *Stambhas* or *Lats.*—The **Lat, Allahabad** (B.C. 250), is the best-known of these columns, which were carved with inscriptions and crowned with emblems, such as the elephant and lion, often reminiscent of Persepolitan architecture (p. 57).

2. *Topes* or *Stupas* (Sanskrit, *sthupa* = a mound). — The **Bhilsa Topes** north of the Nerbudda River form the principal group of these mounds, erected to give importance to some sacred spot. The **Sanchi Tope** (c. B.C. 150) (p. 791 B), the best-known of this group, is raised on a platform 14 ft. high surrounded by processional paths with railing and four gateways, and is a solid mound of brickwork 106 ft. in diameter, 42 ft. high, faced in stone and cement and crowned by a " tee " or relic-casket. An excellent model is in the Indian Museum, South Kensington.

There are other groups at Sarnath (near Benares), Buddh-Gaya, and Amaravati (portions in the British and Indian Museums). When the mound contained a sacred relic it was known as a " dagoba."

3. *Rails.*—The **Rail of the Sanchi Tope** (pp. 791 B, 792 A, E), like many others which formed enclosures to topes, clearly indicates a timber origin, and was elaborately carved. The gateways in this rail (p. 792 A) are 35 ft. high and 30 ft. wide, and are covered with symbolic sculptures of historic interest, which tell the life-story of Buddha and illustrate the worship of relics and trees, besides giving a record of the law and depicting battle scenes. These rail gateways, of which there is a full-size reproduction in the Indian Museum, are the prototypes of numberless Chinese " pai-lous " (p. 811).

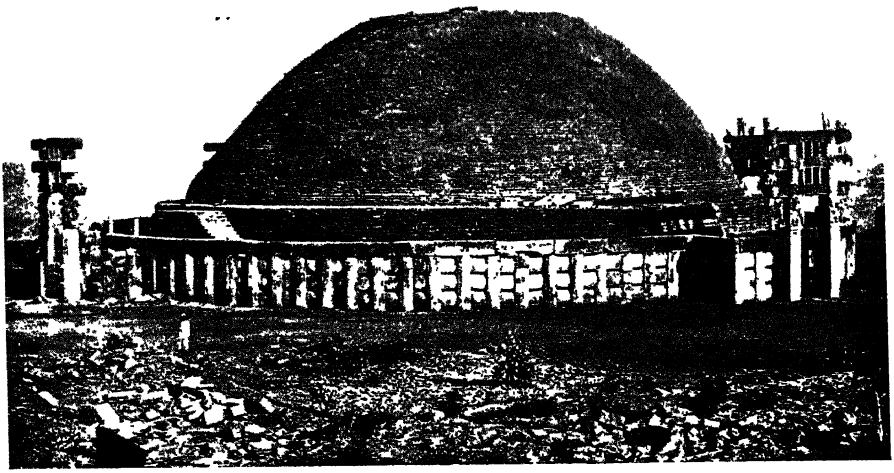
4. *Chaityas* or *Temples.* — The **Chaityas** at **Bhaja** (B.C. 250), **Nasik** (B.C. 129), **Karli, Ellora, Ajanta** (p. 795 B), and **Elephanta** (p. 791 A) form parts of the principal groups, hewn in the face of the Western Ghâts east of Bombay. They date from B.C. 250 to A.D. 750, and recall the rock-cut tombs of Upper Egypt (p. 26) ; as they are all excavated out of the solid rock they present only one external façade. The normal plan is like that of a three-aisled cathedral with semicircular apse, containing the shrine at the end farthest from the entrance. The roofs are hewn to a semicircular form, with ribs resembling timber-work. In many the frontal screen was of wood, with an opening of horseshoe form through which the only light was admitted.

The **Chaitya, Karli** (B.C. 78) (p. 795 A), which resembles the choir of Norwich Cathedral in general arrangement and dimensions, is 126 ft. long, 45 ft. wide, and 45 ft. high, and the columns separating nave and aisles are octagonal with elephant capitals to support the circular roof.

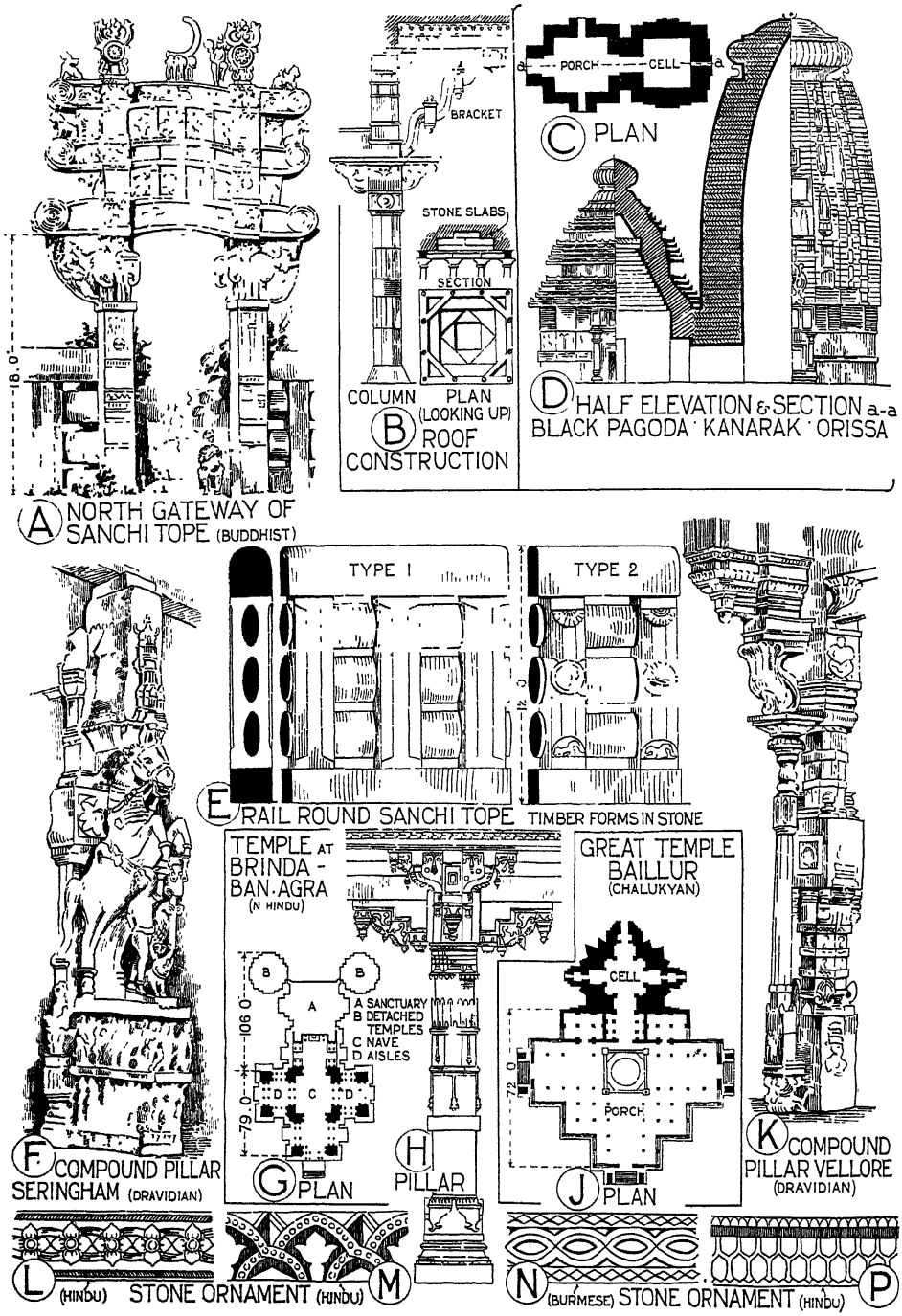
5. *Viharas* or *Monasteries.* — The **Monasteries, Gandhara** (North-West India), opened out by General Cunningham, are in some instances structural in character and are probably of the fourth century of our era, some containing courts for shrines. Others are in proximity to chaityas, and are rock-cut with a central square space, with or without columns, surrounded by priests' chambers, while there is occasionally a sanctuary for the shrine. The details of the Gandhara Monasteries show Greek and Byzantine influence in the acanthus leaf (p. 105 D), the Byzantine cubiform capital (p. 240),



A. Rock-cut Temple, Elephanta : Interior



B. Sanchi Tope, from E.



A NORTH GATEWAY OF SANCHI TOPE (BUDDHIST)

B ROOF CONSTRUCTION

C PLAN

D HALF ELEVATION & SECTION a-a BLACK PAGODA · KANARAK · ORISSA

E RAIL ROUND SANCHI TOPE TIMBER FORMS IN STONE

F COMPOUND PILLAR SERINGHAM (DRAVIDIAN)

G PLAN

H PILLAR

J PLAN

K COMPOUND PILLAR VELLORE (DRAVIDIAN)

L (HINDU) STONE ORNAMENT (HINDU) M

N (BURMESE) STONE ORNAMENT (HINDU) P

and the Corinthian capital. In Ceylon there are numerous remains of topes, chaityas, and viharas, principally at Pollonarua and Anuradhapura, which was the capital from B.C. 400 to A.D. 769.

(2) JAINA ARCHITECTURE

(A.D. 1000–1300 WITH REVIVALS)

Mount Abu (p. 797 C) with a fine group of temples, **Palitana** (p. 797 A), **Girnar** (in the Gujerat district), **Parasnath, Gwalior** (p. 796 B), and **Khajuraho,** possess the principal monuments in Northern India.

The **Dilwarra Temple, Mount Abu** (A.D. 1032) (pp. 796 A, 797 B), erected by Vimala Sah, is one of two important temples in white marble on this granite plateau, which is interspersed with luxuriant vegetation, 5,000 ft. above the sea. It has a splendid portico-hall with columns crowned by bracket capitals (p. 796 A), from which raking marble struts appear to support the architrave, and the interior of the dome is sculptured with concentric rings of ornament, with sixteen statues at the base and a richly carved pendant in the centre, recalling those at Caudebec (Normandy) or in Henry the Seventh's Chapel, Westminster. This exquisitely carved gem is but one of the wonderful series of temples and shrines erected by the wealthy sect of Jains in the sacred seclusion of Mount Abu.

The **Temple, Ranpur** (A.D. 1439), near Sadari on the side of the Aravulli Mountains, is perhaps the most complete of all Jaina monuments. It stands on a lofty substructure some 200 ft. square, and is surrounded by a range of eighty-six cells, each crowned with a " sikra " or pyramidal roof. There are five shrines, one central with a quadruple image of Adinath, and one in each angle, and four open courts for the admission of light. Twenty domes, 21 ft. in diameter, supported on over 400 columns, are placed symmetrically in groups of five round these angle shrines. The central dome of each group is three storeys in height and 36 ft. in diameter, and is formed, as usual, of stone in horizontal courses. The interior resembles a woven architectural web of great beauty of design and delicacy of detail ; there are endless vistas of many columns, light and shade from open court and covered colonnades, variation of grouped domes, and a multiplicity of image cells—all intricately connected one with another by corridors laden with delicate sculpture. The external appearance, with domes of different heights and many pointed " sikras," is rich and varied in character with the rose quartz mountains as a background.

In Southern India there is another type of Jaina temples known as " bettas," consisting of open courtyards containing immense statues, sometimes cut out of the solid rock, as the statue, 60 ft. in height, at Stravana Belgola.

(3) HINDU OR BRAHMAN ARCHITECTURE

(*a*) NORTHERN HINDU (A.D. 600 to the present time).

The **Temples, Orissa** (A.D. 800–1200), on the east coast, form a remarkable series of these Hindu monuments, which display the chief characteristics of the style. The normal type of temple is square on plan ; the " vimana " has a curved pyramidal roof, the porch is without columns and is crowned with stepped roof, while other chambers were sometimes added. Each façade has rectangular projections in the centre, which increased so much in depth, as the style developed, that they formed the points of a square ;

but the large enclosures and gateways, typical of the Dravidian temples, are absent.

The **Great Temple, Bhuvaneswar,** dating probably from the ninth century with later additions, is one of some hundreds to be found in this ancient city, and is often quoted as the finest of Hindu temples. Originally it had only a " vimana " and porch, to which in later times a dancing-hall and refectory were added. Its chief glory lies in the devotional labour lavished by the Hindus on the delicate carving of every separate stone, not only in the interior, but on the façades and pyramidal roof of the " vimana," which is practically a square tower curved inwards towards the top to support a melon-like ornament and finial. Multiplicity of detail and minuteness of features make the building seem of imposing dimensions.

The **Black Pagoda, Kanarak** (ninth century) (p. 792 C, D), really a sun-temple, is another example in Orissa. It is typical of the construction of Hindu temples, with two chambers, of which the beautiful porch, with its three-storeyed roof, alone remains. The cell is, as usual, square on plan, and its position is indicated externally by a tower or " sikra " bending inwards towards the summit and surmounted by a massive circular coping stone bearing a vase.

The **Temple of Juganat, Puri** (A.D. 1174), is world-famous, and of immense size, with four chambers and a double enclosure about 650 ft. square, surrounded by a wall 20 ft. high with four gateways, but is artistically inferior to the older temples.

The **Temple of Papanatha, Pattadakal** (A.D. 700), in Dharwar on the west coast, was influenced by Dravidian architecture, with pillared porch opening into a large hall of sixteen columns, which gives access to the shrine beyond.

The **Temple, Chandravati** (ninth century), in Rajputana, beautiful in design and of exquisite craftsmanship, is one of the earliest temples in this style.

The **Temple, Baroli** (ninth century) (p. 802 C), although in ruins, is of dainty proportions, and has a columned porch with magnificently sculptured roof, while in front is a detached nuptial hall.

The **Temple, Udaipur,** in Gwalior, dates from the eleventh century and is still in a very perfect state, with low pyramidal stepped roof over the porch and a lofty tower, with a multiplicity of delicate carvings.

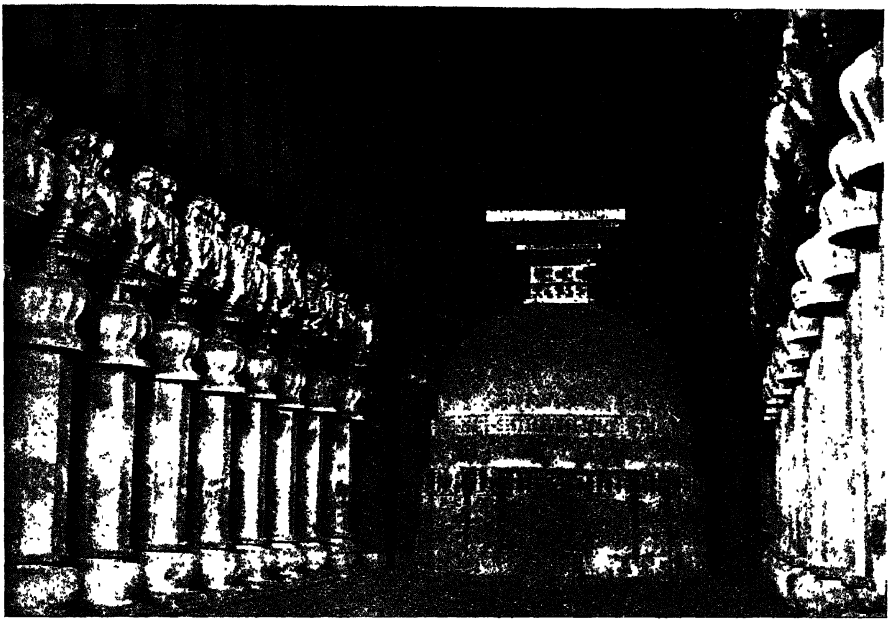
The **Temple of Kandarya Mahadeo, Khajuraho** (p. 802 D), is the most important of a group of thirty temples (A.D. 950). It has the usual two chambers raised on a well-proportioned stylobate, and has three rows of sculptured figures half life-size, nearly one thousand in number. The " sikra " is enriched by sculptured reproductions of itself in miniature, which is a favourite method in this style.

Modern monuments are found in Kantonugger (A.D. 1704), Amritzar (A.D. 1766), the sacred metropolis of the Sikhs, and in Gwalior.

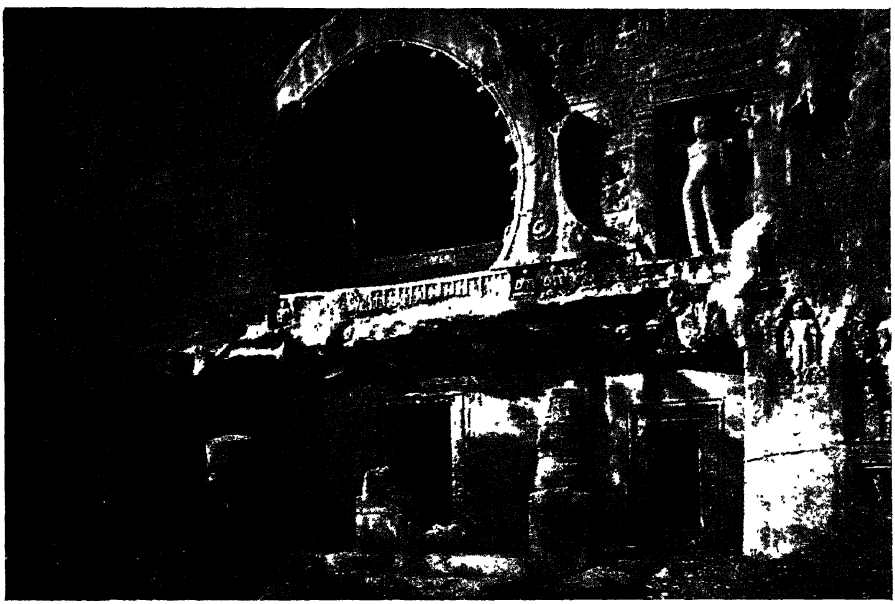
Civil Architecture.—Palaces, cenotaphs, and ghâts abound. The ghâts, or landing-places, lining the great rivers, such as the Ganges, are used by the Hindus as bathing-places, and have long ranges of steps terminated by kiosks and backed by shelters and temples.

(*b*) CHALUKYAN ARCHITECTURE (A.D. 1000–1200).

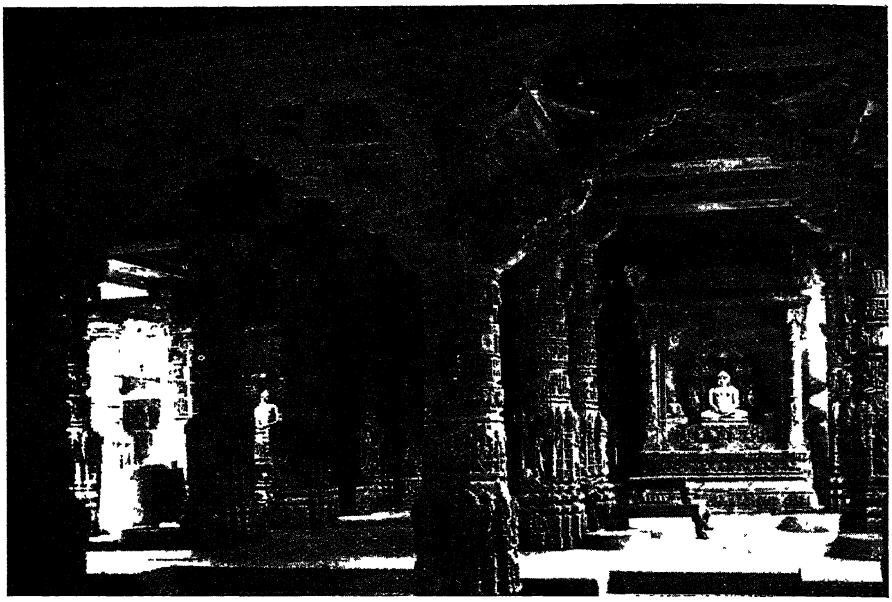
The **Temple, Umber** (p. 798 A), like many other temples of this style, is distinguished by terraces, 3 or 4 ft. high, on which it stands, and has the star-shaped " vimana " and the straight-sided roof-cone, in richly carved steps, surmounted by the typical vase ornament.



A. Rock-cut Temple, Karli : Interior



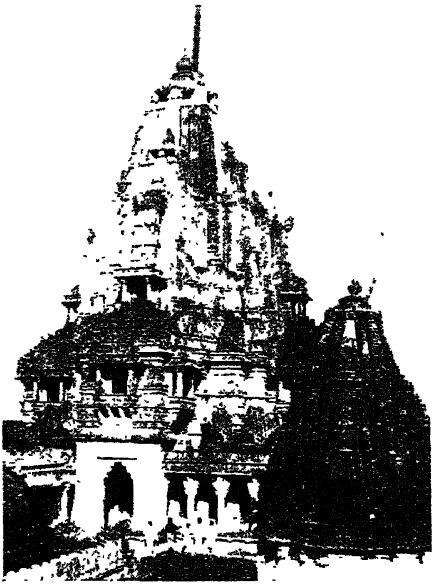
B. Rock-cut Temples, Ajanta : Façade



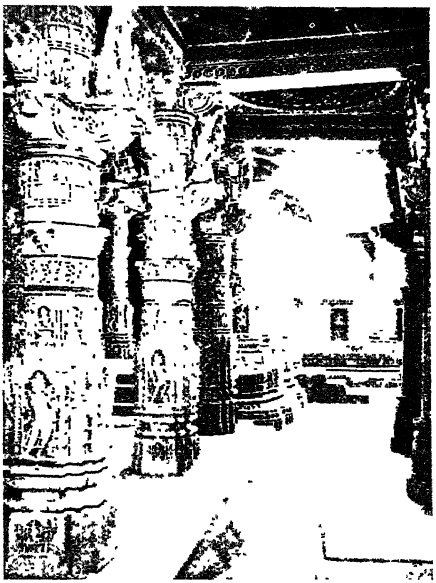
A. Dilwarra Temple, Mount Abu: Interior



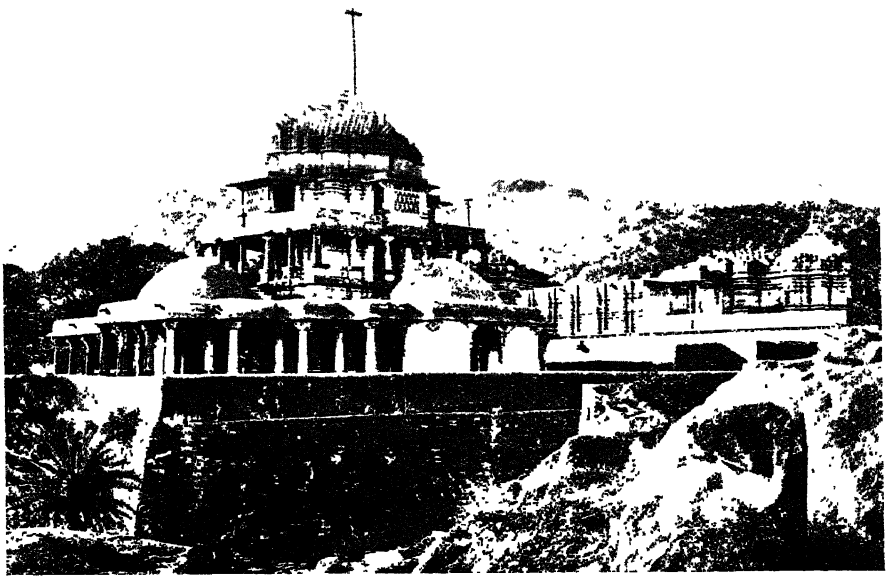
B. The Great Sas Bahu Temple in the Fort, Gwalior



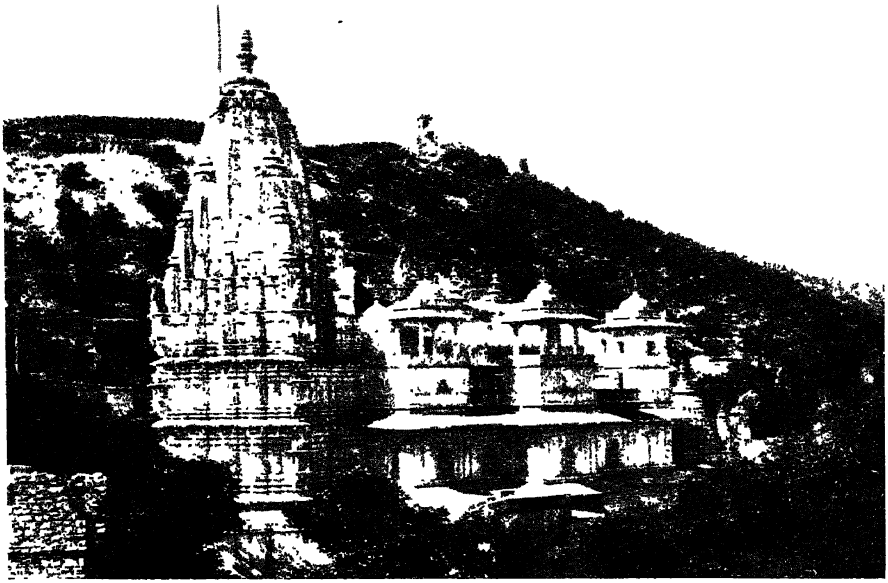
A. The Great Temple, Palitana



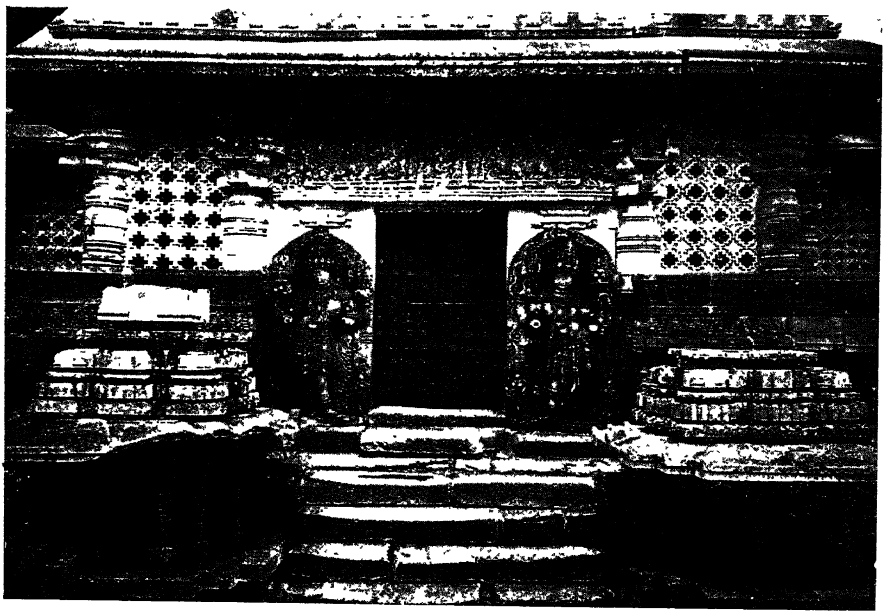
B. Dilwarra Temple, Mount Abu: Aisle



C. The Jain Temples, Mount Abu



A. HINDU TEMPLE, UMBER



B. DOUBLE TEMPLE, HULLABÎD : DOORWAY

The **Temple, Hullabîd** (A.D. 1224) (p. 798 B), consists of unfinished twin temples standing side by side on a terrace 5 ft. high, with detached pillared porches, each as a shrine for an idol. The walls have friezes 700 ft. long, carved with numerous representations of elephants, lions, horsemen, birds, and bas-reliefs of scenes representing the conquest of Ceylon, while the window openings have pierced marble slabs of elaborate design.

The **Great Temple, Baillûr** (A.D. 1117) (pp. 792 J, 805) with solid "vimana," vestibule, and star-shaped richly fenestrated porch, and the **Temple** at **Somnathpûr** (A.D. 1043), are other characteristic Chalukyan buildings in Mysore.

(*c*) DRAVIDIAN ARCHITECTURE (A.D. 1350–1750).

The "**Raths**" at **Mahavellipore** (near Madras) and **Ellora** (A.D. 750–950) (p. 801 A) are actually rock-cut temples, but differ from other rock-cut examples in that they are free-standing, with the surrounding rock cut away so that all external façades are exposed. The normal type, as in the Jaina temples, has a square "vimana" or image-shrine, crowned by a many-storeyed pyramidal roof with a "mantapa" or entrance porch (p. 802 B). In connection with the temples are "choultries" or halls of 1,000 columns, "gopuras" or gate pyramids (p. 802 A) to the enclosures round the shrines, and sacred lakes or water tanks, with flights of steps, all grouped together with little regard for symmetry, and enclosed by a high wall as in Egyptian temples.

The **Temple, Tanjore** (fourteenth century), with its thirteen-storeyed "sikra" (p. 801 B); the **Temple, Madûra** (A.D. 1623), with its celebrated "gopura" (p. 802 A) and "choultrie," 333 ft. by 105 ft., and columns with life-sized sculptural figures attached; the **Temple, Seringham** (seventeenth century) (p. 792 F), with its fifteen great "gopuras"; the **Temple, Tinnevelly**, with its double temple and hall of 1,000 columns, and the temples at **Conjeveram, Vellore** (A.D. 1350) (p. 792 K), **Tarputry** (p. 802 B), and **Chidambaram** (seventeenth century) are the best-known monuments.

In Further India, Burma, Siam, Java, and Cambodia there are temples, monasteries, and pagodas of great size and importance.

4. COMPARATIVE ANALYSIS

A. Plans.

Buddhist.—The remains of Buddhist "chaityas" show that these temples were hewn out of the rock with only one external façade. In plan they resemble Christian cathedrals with three aisles formed by two rows of piers or columns; while the sanctuary around which the aisle is carried is semi-circular. The "viharas" (monasteries) are also rock-cut, and generally consist of a central hall surrounded on three sides by cells for the priests. Sometimes there are columns in the central space to support the rock overhead, and in the larger "viharas" the sanctuary is a special apartment with a screen of columns, as at Nasik.

Jaina.—Temples owe much to picturesque grouping on hill-sides or in wooded valleys. They consist of a square cell for the image of the Jina, roofed with a high curvilinear pyramidal tower or "sikra." In front is a pillared portico with pointed dome supported on eight pillars forming an octagon which was brought to a square by adding four angle columns (p. 792 B), and further columns make the structure externally cruciform on plan. The planning of the dome on an octagonal base makes the width of

nave to aisles in the proportion of 10 to 7, a somewhat similar treatment adopted in the successful interior of S. Stephen, Walbrook, London (p. 725). The larger temples stand in a great open court surrounded by numerous cells, which at Girnar number seventy, each containing a cross-legged statue of the Jina to whom the temple is dedicated.

Hindu (or Brahman).—Hindu temples are similar in plan to Jaina temples, but with local differences; Dravidian temples, for instance, have in addition characteristic "choultries" or "halls of 1,000 columns," and the surrounding wall generally encloses sacred lakes or water tanks, while Chalukyan temples are usually star-shaped on plan (p. 792 J).

B. **Walls.**

Wall construction and treatment is very similar in Buddhist, Jaina, and Hindu buildings. The material is principally massive blocks of granite, stone, or marble, sometimes laid without mortar. Plain wall-surfaces seem to have been avoided, and the characteristic Eastern treatment of the whole surface of walls with sculpture is employed in all three styles (see Ornament, p. 804). The "gopuras" or gate pyramids of the Dravidian style (p. 802 A) resemble, in their massiveness, the pylons of Egyptian temples (p. 28 B).

C. **Openings.**

Buddhist.—The gateways of the Sanchi Tope (pp. 791 B, 792 A) are special and peculiar features of this style. In rock-cut façades a horse-shoe arch forms one great eye as the only opening for light (p. 795 B). Within this arch an open decorated wooden screen moderated the glare of the Eastern sun. This single beam of subdued light is thrown from behind the worshippers on to the shrine, and produces an impressive effect of light and shade among the surrounding close-set columns (p. 795 A).

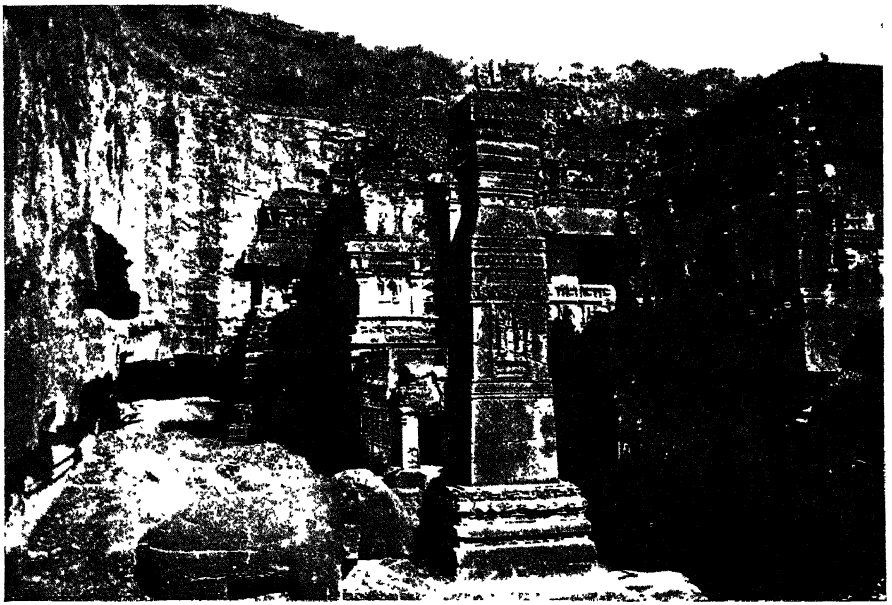
Jaina.—Openings are normally square-headed. In pillared porches stone architraves rest on bracket capitals, and a characteristic Eastern effect was produced by stone struts, evidently derived from a timber form (pp. 792 B, 796 A), and occasionally filled in with ornament to form a triangular-headed opening (p. 797 A). An extension of the bracket capital is sometimes applied to wall openings, lintels being supported by brackets built out in horizontal courses.

Hindu.—Flat-headed openings are usual, but variations in roofs are made by the use of brackets supporting purlins of stone on which other brackets were placed, thus gradually reducing the span so that stone slabs could roof over the apartment, as at the Dravidian temple at Chidambaram. Chalukyan buildings have pierced window slabs, as at Baillûr (p. 805) and Hullabîd in star-shaped patterns, ornamented with foliage or with mythological subjects (p. 798 B). These pierced slabs are very distinctive of this style, though somewhat similar to Byzantine and Saracenic treatment.

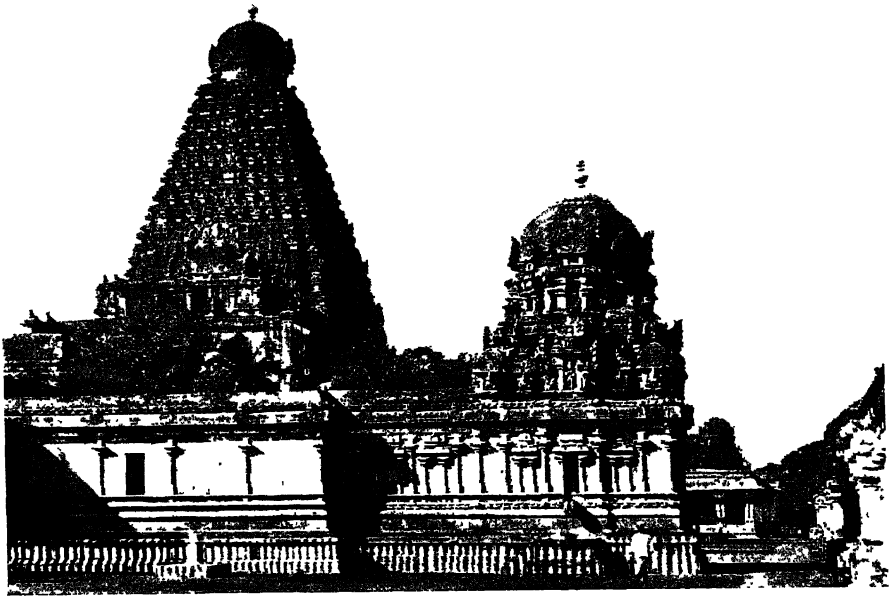
D. **Roofs.**

Buddhist.—The early rock-cut "chaityas" have semicircular roofs excavated in the rock with stone imitations of wooden ribs (p. 795).

Jaina.—The "sikra" over the idol-cell was formed of stone slabs in horizontal courses; its external curved outline was probably produced by following the internal pointed dome, and the apex was crowned by a melon-like ornament and finial (p. 797 A). The roofs of Jaina porches are of two types:—(1) A roof of flat slabs which was evolved from the simple



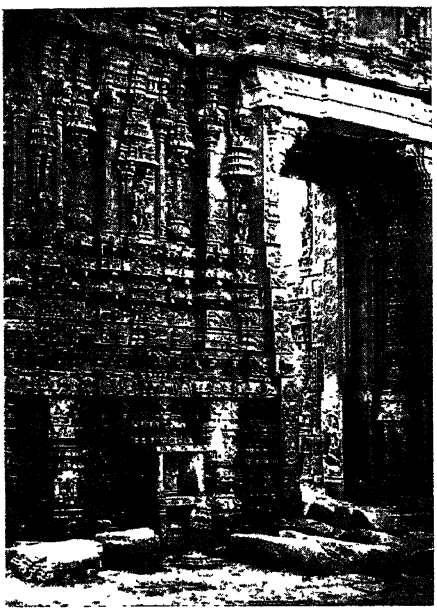
A. The Rath, Ellora



B. The Great Temple, Tanjore



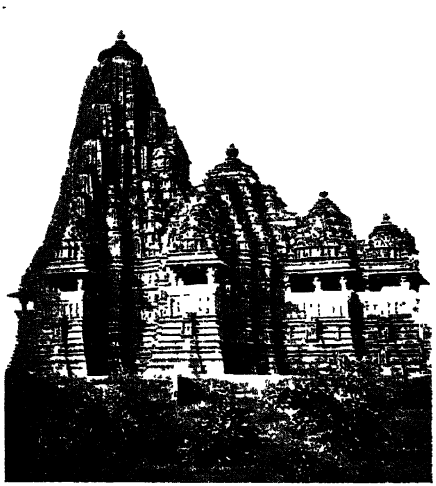
A. The Gopura, Madûra



B. Old Temple, Tarputry. Portion of Entrance



C. Column and Temples, Baroli



D. Kandarya Temple, Khajuraho

square slab of stone resting on architraves supported by four columns. Larger spaces were roofed by introducing courses of triangular slabs at the four angles to support the square slabs (p. 792 B). Still larger spaces were roofed by the addition of two extra columns on each side to support the longer architrave, making twelve columns to the compartment, of which the intermediate columns form an octagon. (2) The Jaina dome, which seldom exceeds 30 ft. in diameter, is formed in horizontal courses (cf. the Treasury of Atreus, Mycenæ, p. 70 A), and is pointed or conical in section (p. 792 D) so that a single stone can crown the top. When covering an octagonal plan, the circular cornice from which the dome springs is supported by struts from the capitals of the columns forming the octagon beneath, instead of by pendentives, as in the Byzantine style. The use of ornamental struts gives an appearance of strength to the architrave, but their constructive value is doubtful (pp. 792 B, 796 A). Decoration in concentric rings followed the horizontal lines of the construction and a top stone formed a pendant.

Hindu.—Dravidian temples have roofs over the "vimana" of the storeyed pyramidal type (p. 801 B), normally carried to a considerable height and carved with miniature representations of itself in each well-defined storey. Chalukyan towers are either of the storeyed Dravidian type and follow the curvilinear outline of the Northern Hindu temples or are in the form of a straight-sided stepped cone.

E. **Columns.**

Buddhist.—Indian columns are most characteristic and are unlike those in any other style. The origin of their form is unknown, but it seems certain that they had a timber prototype. There was no standardised system of recognised types as in Greece or Rome (p. 116). The shaft is as much ornamented as capital and base (p. 792 K), and the characteristic bracket capital (p. 792 B, H) takes a variety of forms. Buddhist columns are often octagonal (p. 795 A). In the great rock-cut Chaityas at Karli and Bedsa they are stumpy and so closely set as to screen the rock-wall behind. They gave the necessary light and shade to the interior, as did the columns to the exterior of a windowless Greek temple. The numerous forms of capitals, resembling in certain instances those of Assyria and Persepolis, are bewildering. Sculptured lions, horses, or elephants supporting men, women, and the "chakra" or Buddhist wheel occur, as at Bedsa; while at Elephanta, torus or Dutch-cheese mouldings, ornamented with palm leaves, are found under capitals of a coarse Roman Doric type (p. 791). In north-west India, in the Gandhara district, Greek or Byzantine influence produced capitals with delicate acanthus-leaf carvings.

Jaina.—Columns are much used and exhibit great variety of design, and capitals are of the "bracket" type, probably derived from a timber original. Sometimes, as at Mount Abu, they are even superimposed, the upper supporting an architrave which is further upheld in the centre by stone struts resting on the lower capital (pp. 796 A, 797 B).

Hindu.—The Northern Hindu Column at Baroli (p. 802 C), with its sculptured shaft reminiscent of the Temple of Artemis at Ephesus (p. 103 C), has evidently lost its bracket capital, and, with a companion column on the right, formerly supported a "toran" or archway. In Dravidian "choultries" there was great scope for the inventiveness of the Hindu craftsman. Capitals are of the "bracket" type, and in some instances not more than

two columns in a building are alike. Some, as at Madura or Seringham, have life-size figures of saints or Yalis (weird lion-like monsters) attached to them (p. 792 F), forming a contrast to Greek caryatids (p. 123 J). In other cases there are compound piers formed of one sturdy and one slight column p. 792 K).

F. Mouldings.

In all three styles mouldings are normally of a bulbous, swelling outline and often lack refinement. A form made by overlapping rectangular slabs is frequently used in the bases and capitals of columns and "dagobas" (shrines). In other instances, as at Bedsa, a semicircular open-work moulding, recalling basket-work, is employed. The torus is used, and the double-convex shape, into which the cross-pieces of the "rails" are cut, forms deep horizontal bands of ornament and takes the place of mouldings proper (p. 792 E).

G. Ornament.

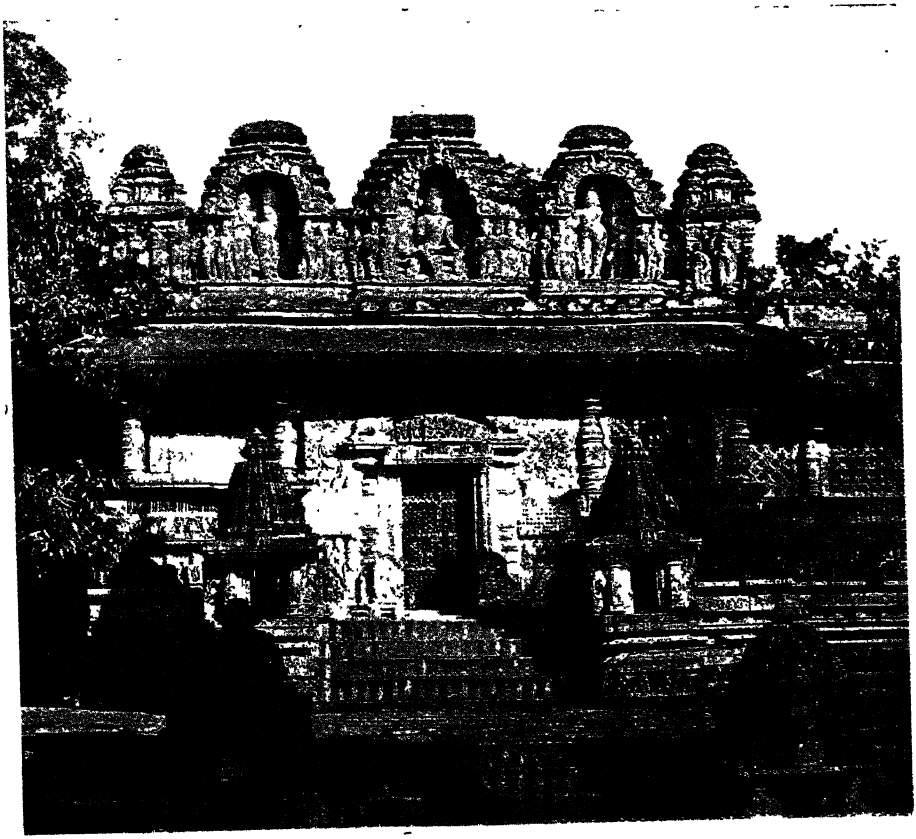
Sculpture is carried out in all three styles with a profusion unknown in other countries, and is executed principally in hard stone; having little plain wall surface as a frame, it forms a monument of patient labour, perhaps unequalled. Sculpture is indeed so bound up with the peoples' religion and mythology, of which it forms the mirror, that the two cannot be considered separately. In Jaina architecture, each of the twenty-four Jinas (p. 787) had a distinctive sign, which was utilised by the sculptors. The trident, shield and "chakra" (or wheel), the "rail" ornament, copied from the Sanchi Tope (p. 792 E), and imitations of window fronts and façades are also repeated on the fronts of the early chaityas, as at Bedsa, Nasik, and elsewhere. Most characteristic are the repetitions on a façade or tower of numerous miniature carved representations of itself—a mode of decoration also used in Assyria—and the remains often enable a fanciful restoration to be made. Painted frescoes were employed, as at Ajanta, where the walls of the cave were left plain for the purpose. The evolution of the sculptured umbrella-shaped "tee" surmounting the "dagoba" is interesting as the prototype of the nine-storeyed pagodas of China. On the Gateways at Sanchi (of which there is a plaster copy in the Indian Museum, South Kensington) are represented legendary events from the life and religion of Buddha, the worship of trees and relics as well as warlike scenes (pp. 791 B, 792 A). The three, five, or seven-headed Naga or serpent is frequently introduced; while horses, lions, "hansas" (sacred geese) form favourite subjects, in striking contrast to the "motifs" of Mahometan sculpture (p. 831).

The Indian Museum, South Kensington, possesses a valuable collection of portions of original buildings and models of temples, monuments, and houses.

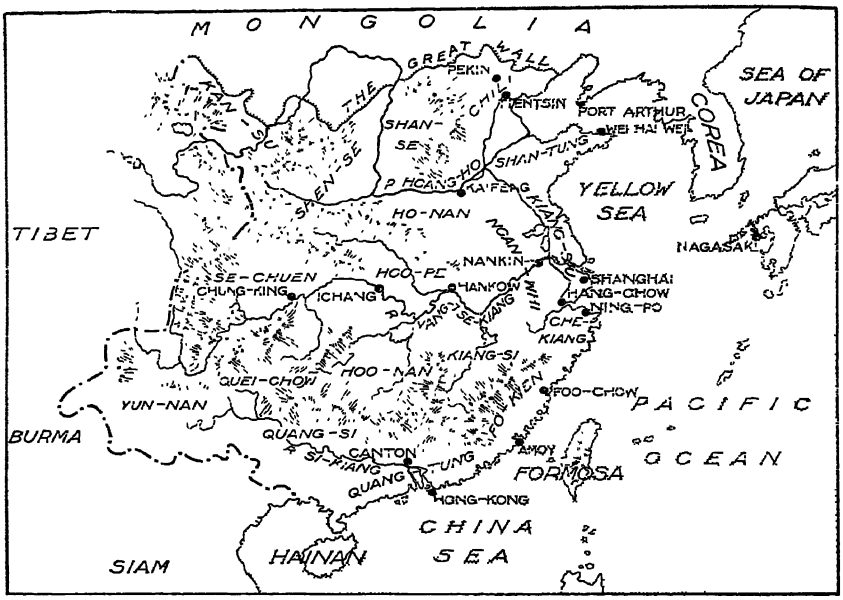
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GREAT TEMPLE, BAILLÛR, FROM E.



CHINA

CHINESE ARCHITECTURE

1. INFLUENCES

i. Geographical.—The Chinese Empire, comprising China proper, Tibet, and Mongolia, covers a larger area than the whole of Europe. It is for the most part mountainous, but has four great trading rivers which facilitate internal commerce, while there is a network of canals for irrigation and navigation in the low-lying provinces, and canals and navigable rivers together form the principal highways of China. The " Grand Canal," for example, extending from Tientsin to Hangchow, is 600 miles long. Excellent harbours promoted that intercourse with India and Assyria which influenced architectural forms; for the Chinese pagoda probably came direct from an Indian prototype (pp. 801, 804) or was derived from the pyramidal, many-storeyed buildings of lower Chaldæa.

ii. Geological.—Abundance of minerals, including coal, salt, iron, and copper, always made China one of the richest of countries; while, as in India, timber from the vast forests of bamboo and pine, which existed in ancient times, was employed for building, and whole villages of cave dwellings were excavated out of the friable " loess " soil in the north. Brick-making was probably introduced from the west of Asia on the pattern of bricks found in the ruins in Mesopotamia, as the clay of Chinese river plains provided suitable material for this purpose. In city walls the bricks were usually about 18 ins. long, and for buildings small grey-coloured bricks were often used. Large beds of porcelain clay are found in the province of Chêh-Kiang

and elsewhere, and out of this was made the beautiful old blue china of Nankin which is famous throughout the world. Tiles, plain, glazed, and coloured, were generally used for roofs, and yellow was the Imperial colour. The red sandstone and limestone in the south were used for bridges, gateways, and public works generally, and there was marble balustrading around tombs and important buildings.

iii. Climatic.—The mountains, which run east and west, direct the sea winds which moderate the temperature. North China has a short but sharp frosty winter and a warm and rainy summer, and during the monsoons very heavy rains occur, which influenced the design of such features as the widely-projecting roof with steep surfaces to throw off rain-water. Roofs are turned up at the eaves to admit light, while excluding heat and glare (pp. 813, 814). Fires are principally used for cooking purposes and not for comfort, and chimneys are therefore unimportant and seldom provided, as the charcoal or wood fire is allowed to discharge its fumes into the apartment.

iv. Religious.—The two main religious and ethical influences in China are Confucianism (Confucius, B.C. 551–475) and Buddhism, introduced from India about A.D. 90. Confucianism was founded rather on an ethical code of moral doctrines and golden rules of conduct than on any definite religious belief. This is chiefly responsible for the absence of a dominant priesthood and also for that lack of important religious buildings which has so much astonished travellers, inasmuch as the Chinese were probably civilised as early as the Egyptians, who, mainly owing to their strong religious beliefs, erected temples and tombs unequalled in grandeur. Buddhism, which first combated and partly absorbed the older Taoism, is said to have taken root among the people by the fourth century of our era. Temples and shrines erected to Buddha or Confucius, though numerous, are unimportant, and thus form a marked contrast to the monumental temples of Egypt; while in the pagoda alone do we see any trace of religious imagination and aspiration, which is such a controlling factor of Mediæval art in Western Europe. The poor family has, however, its altar and household gods and the wealthy family its ancestral hall of worship. Chinese belief in life after death was expressed by means of sacrifices to the spirits of the departed, and indeed ancestor worship led to such veneration for graves that the Chinese will plough around them for generations rather than be guilty of the sacrilege of disturbing them.

v. Social.—The prehistoric period in China, with successive "heavenly," "terrestrial," and "human emperors," is but dimly shadowed in legend. The Chinese point to Fu-hi (B.C. 2800) as the first emperor who evolved social order out of chaos; while to his immediate successors are ascribed the development of agriculture, the invention of hieroglyphs, the building of temples and planning of cities. A succession of these mythical emperors was followed by the first historic, or "Chou" dynasty, and the first certain date in this dynasty is fixed by an eclipse of the sun in B.C. 776. After this dynasty, emperors became less powerful and feudal vassals waxed stronger, till in the Tsin Dynasty, Shi-Hwang-Ti (B.C. 246–210), "the first Universal Emperor," became strong enough to abolish the feudal system. He also divided the country into provinces, built roads, canals, public buildings, and a great royal palace. Succeeding dynasties are referred to under historical influences, in so far as they brought China into contact with the world outside her borders. Chinese government was always until our day despotic under an Emperor, as head of State and Church, and the different provinces are

governed by mandarins, appointed from time immemorial by competitive examination.

Society was based on the family with the idea of absolute obedience to parental authority, and this is linked up with reverence for ancestors. There was no aristocracy, as we understand it, no hereditary nobility, but an enormous bureaucracy and army of retired officials who became landowners, and besides these there were the literary, agricultural, trading, and artisan classes. In such a community it was natural that property should not be hereditary, and it was equally divided amongst the family, conditions which were not conducive to the erection of great castles and mansions. Domestic architecture was subject to regulations as to the form and size of the houses intended for the different classes of the community. China has been termed the country of the middle classes—" literati," small proprietors and merchants—whose buildings indicate special regard for utility. There was an absence of the social conditions of Egypt and Assyria, where supreme monarches controlled unlimited slave labour, for the erection of monumental structures to their own glorification. The " guilds," into which the trades and crafts were formed, date from about A.D. 600, and much resembled the guilds of Mediæval Europe.

It is true of Chinese social customs generally that as they were in the beginning, so have they continued through the long ages during which the Chinese have ever been girt about by the Great Wall, and so sheltered from external intercourse. Even in our day the Republic has done little to alter their unchanging customs or their peculiar architecture.

vi. Historical.—The early history of China is indistinguishable from the legends of Emperors, who were identified with various progressive steps in civilisation. The Chou Dynasty is said to have waged war in the tenth century B.C. against the Barbarians or Huns on the north. During the Tsin Dynasty (B.C. 249–210) Shi-Hwang-Ti, " the first Universal Emperor " (B.C. 246–210), built the " Great Wall " (B.C. 214) against barbarian inroads. The Han Dynasty (B.C. 206—A.D. 23) sent Chinese ambassadors to Western Asia, discovered India, and made Eastern Turkestan a Chinese colony. In the time of the Eastern Han Dynasty (A.D. 23–220) Emperor Ming Te extended the Chinese Empire and Buddhism was introduced from India. During the reign of Sze-Ma-Yen of the Western Tsin Dynasty (A.D. 265–590), the Emperor Diocletian sent ambassadors to China (A.D. 284). Tai-tsung (A.D. 627–649) of the Thâng Dynasty (A.D. 618–907) purchased the alliance of the Turks, just as the Emperor Justinian had done in A.D. 558, and regained Eastern Persia up to the Caspian Sea. Ambassadors from Persia and Constantinople went in A.D. 645 on a mission to the Emperor. During the Sung Dynasty (A.D. 960–1280) China was engaged in war with the Mongols. In the tenth century the Chinese Emperor invaded Chaldæa, penetrated to the Mediterranean, and maintained a protectorate in Mesopotamia for more than sixty years. This expedition may have suggested Chaldæan temples as prototypes of Chinese structures and of pagodas in receding stages, and some authorities date from this period the art of enamelled brickwork in China. Under the Emperor Kublai (A.D. 1280–94) of the Mongol or Yuen Dynasty (A.D. 1280–1368), China reached her greatest extent, and with the exception of Hindustan, Arabia, and Western Asia, all the Mongol princes as far as the Dnieper were her tributaries. It was during this period that Marco Polo visited China. The Emperor undertook public works and patronised literature, and Persian workmen introduced the art of making blue and white

porcelain. Hung-Wu, the first Emperor of the Ming Dynasty (A.D. 1368–1644), conquered the Mongols and established his capital at Nankin, but his successor removed it to Pekin, the present capital. Intercourse with Europe was suspended till the arrival of the Portuguese in the sixteenth century, and in the following century the first English merchants visited China. The Manchu-Tartar Dynasty, which lasted from A.D. 1644 up to the establishment of the Republic (A.D. 1913), introduced the shaved head and pigtail of the Chinese as emblems of Tartar sovereignty. At the beginning of the seventeenth century German Jesuits influenced the studies of the Emperors. Kang-He (A.D. 1661–1721) added Tibet to the Empire and published the Dictionary of the Chinese language. Kien-Lung (A.D. 1735–95) invaded Burmah, Cochin-China, and Nepaul, and crushed the Mahometan rebellion. He received Lord Macartney as first ambassador of George III. In A.D. 1840 war was declared by England against China, and this marks the beginning of European intervention. In A.D. 1873 foreign ministers obtained the right of audience with the Emperor, but innovations have done little to alter the unchanging character of Chinese architecture. In A.D. 1913 the newly introduced Chinese Republic adopted the calendar of Western Europe.

2. ARCHITECTURAL CHARACTER

The architecture of China is a faithful index of her civilisation, for both have been practically stationary through many centuries. It must be remembered that Chinese art has always found its chief outlet in painting, which gave full opportunity for the display of the Chinese instinct for fineness of line. The art was poetic rather than material; for the Chinese revelled in the beauty of nature and had little feeling for architectural design, which they held subservient merely to human needs. Chinese architecture, though subject to Buddhist and Mahometan influence on the religious side, held its own as an indigenous style, and so the forms of to-day reproduce, with little change or progress, those of the early centuries of our era: moreover, there is no distinction between sacred and secular architecture, and temples, tombs, public buildings, and private houses, whether great or small, all follow the same plan.

The roof is the chief feature, supported on timber uprights and independent of the walls, which were as useless for support as were the large traceried windows of the Gothic style in Europe. Elaboration of design was produced by constant repetition of roofs one above another, and thus, while height was achieved, a horizontal effect was retained. The great "Confucian Temple of Heaven" at Pekin was dignified by a triple roof of blue tiles, and this use of bright colours, applied in the form of glazed tiles and porcelain, is a characteristic of Chinese buildings. "Pai-lous," or gateways, of stone and wood, derived from Indian "torans," are features of Chinese architecture and, like many others, might only be erected with government permission. Towers in stone, square like those in the Great Wall, are of early date, and show the influence of Chaldæa in the use of arch and vault. The pagoda, the most typical Chinese building, is octagonal on plan, with numerous storeys and repeated roofs, highly coloured, and with upturned eaves. The Chinese built chiefly in timber or brick, even where stone was plentiful, and this is not surprising among a people who, unlike the Egyptians, cared little for permanence or for the interests of posterity. The Chinese had little religious zeal, and therefore few great temples; no territorial aristocracy,

and therefore no noble country houses; little pride of family, and therefore no town mansions, while their domestic architecture was trammelled by sumptuary laws to mark the social status of the owner.

3. EXAMPLES

TEMPLES

The Temple of the Great Dragon, Pekin (A.D. 1420), circular and triple-roofed, stands in an enclosure measuring one square mile and containing the priests' dwellings. The Temple proper, facing south, on the upper platform, consists of hall with double encircling aisles with roofs round the central roof, which is supported on four gigantic columns, and the altars are on raised terraces, north and south. There are three other single-roofed temples, of which one is the "Hall of Central Peace" and the other the Temple of Agriculture (p. 814 D). In all these circular buildings there is the characteristic bracket frieze under the widely projecting eaves.

The Temple of Ho-nan, Canton (p. 814 N), is a typical Buddhist temple, enclosed by a wall with gateway, porch, ante-chapel, successive halls, and sanctuary with the idol, and seats for the monks, with a "dagoba," offices and kitchens beyond.

The **"Temple of the Sleeping Buddha," Pekin,** in the Summer Palace, built of brick in two storeys, is unusual in having circular-headed windows in a clear-story, as well as in the ground storey. The columns are faced with brilliant glazed bricks, and between them are tiers of niches with the statue of Buddha; while the roof has an elaborate cresting with finials and flamboyant dragons.

Most Chinese temples, however, are of the simple T'ing type, consisting of a concave roof on uprights, like the dwelling-houses and differing only in size. There are monastery temples containing the image of the Buddhist triad—just as in England there were monastic churches—surrounded by a wall and approached through the typical "pai-lou" or gateway. The whole monastic group consists of temple, "dagoba" or relic shrine, bell-tower, pagoda, library, and dwellings for the monks.

PAGODAS

The Pagodas ("t'ais"), derived from Indian prototypes, are distributed in considerable numbers over the country, and form the most important structures in the temple enclosures (pp. 813 B, 814 E). They vary from three to thirteen storeys in height, a usual number being nine, sometimes with staircases to each floor, and are constructed in brick. Pagodas had formerly a religious significance, but those erected latterly are secular in character and are sometimes monuments of victory. They are usually polygonal in plan, and the roof angles in each storey are elaborately ornamented.

The Pagoda, Nankin (A.D. 1412, destroyed A.D. 1856) (p. 814 E), called the "Porcelain Tower," erected as a temple of gratitude, contained 2,000 images, and was octagonal, 40 ft. in diameter and 200 ft. high. The whole of its brick walls and projecting roof eaves were clothed in the beauty of coloured porcelain tiles, while the roof eaves to each of its nine storeys curved upwards and, like the chains to the spire, carried some 150 tinkling bells. Conspicuous amongst many are the Tung-chow Pagoda of thirteen storeys, the Tang-chow Pagoda of nine storeys, both at Pekin, the "Flowery Pagoda," Canton, the

Hang-chow Pagoda, the Sao-chow Pagoda of nine storeys, and others at Shanghai, Ning-po, and Nankin. There is a somewhat lifeless example in Kew Gardens which was designed by Sir William Chambers, and there are models in the Indian Museum, South Kensington.

PAI-LOUS

The Pai-lous of China (p. 813 c) bear a family resemblance to the torans of India (cf. the Sanchi Tope, p. 790) and the torii of Japan, and were erected as memorials to deceased persons of distinction. They were constructed of wood or stone and have one or three openings, formed by posts supporting horizontal rails bearing an inscription and crowned with bold projecting roofs of gaily coloured tiles. The **Great Pai-lou, Pekin,** shows the type of construction which is one of the most salient features of Chinese architectural design, with its three openings and horizontal beams, and on it was lavished all possible richness of decoration.

TOMBS

Tombs, though associated with ancestor-worship and therefore sacred, are not of great architectural value because the pai-lous were the real memorial monuments. Tombs are sometimes cone-shaped mounds surrounded by stones, sometimes cut in the rock or designed in the hillside, with a horseshoe back in stone sloping to the front and covered with symbolic carvings, while mythical animals guard the entrance.

The **Tombs of the Ming Dynasty** (A.D. 1368–1644), north of Pekin, are entered through triumphal gateways or pai-lous of white marble and along an avenue a mile in length, flanked by thirty-two large monolithic figures (12 ft. high) of camels, horses, priests, elephants, lions, and griffins. Each of the thirteen tombs consists of an earthen mound, half a mile in circumference, supported by a retaining wall 20 ft. high, and they seem to be founded on such monuments as the Sanchi Tope in India.

The **Tomb of Yung-lo, Pekin** (A.D. 1425), consists of a tumulus, surrounded by a crested wall with a three-storeyed tower, two entrance gateways, and an ancestral hall of the T'ing type in the entrance court.

PALACES

Imperial palaces and official residences were erected as isolated, one-storeyed pavilions resembling temples in general design, and crowned with the typical roof, but these detached buildings are not imposing as are the large homogeneous palaces of Europe.

The **Imperial Palace, Pekin** (p. 813 A), in the centre of the "Forbidden City," has three vast halls, all similar in design, of magnificent proportions and resplendent in oriental decoration. The "Tai-ho-t'ien" or Hall of Highest Peace (A.D. 1602) is the most important, with terraces and open verandahs, and is formed of nave and aisles, parallel to the façade, separated by great columns, with the Imperial daïs at the centre. A Pavilion (p. 814 F) of the Summer Palace, Pekin, destroyed A.D. 1860, gives an idea of some of the smaller buildings. Within the enclosing wall there were residences for Emperor and officers of state, and the groups of buildings were set amidst pleasure gardens, lakes, and grottoes on a magnificent scale.

HOUSES

Houses, generally of one storey like the temples, are constructed with timber supports, filled in with brickwork (p. 814). The building regulations not only govern the dimensions, but also the number of columns, and thus had a marked effect on the plan and arrangement of Chinese houses; for, while the Emperor had his hall of nine bays, a prince was restricted to seven, a mandarin to five, and an ordinary citizen to three bays. Roofs are of steep pitch with boldly projecting eaves and highly ornamented ridges of coloured and glazed tiles, with the angles turned up and finished with grotesque animals or fantastic ornament. The roof-framing in bamboo and other wood is frequently painted red, green, or blue. The houses owe much of their character to their environment of gardens planned to suggest a natural landscape, elaborated with fountains, artificial rocks, woodland scenery, lakes, flower-beds, hanging plants, bridges, watercourses, stepping-stones, and garden temples (p. 814 M). Town houses of importance are also made up of a collection of isolated pavilions, surrounded by gardens. There are three principal divisions, viz.: (*a*) Vestibule or porter's lodge on the street; (*b*) audience chamber and family rooms; (*c*) kitchen and servants' rooms (p. 814 A, B, C).

TOWN-PLANNING

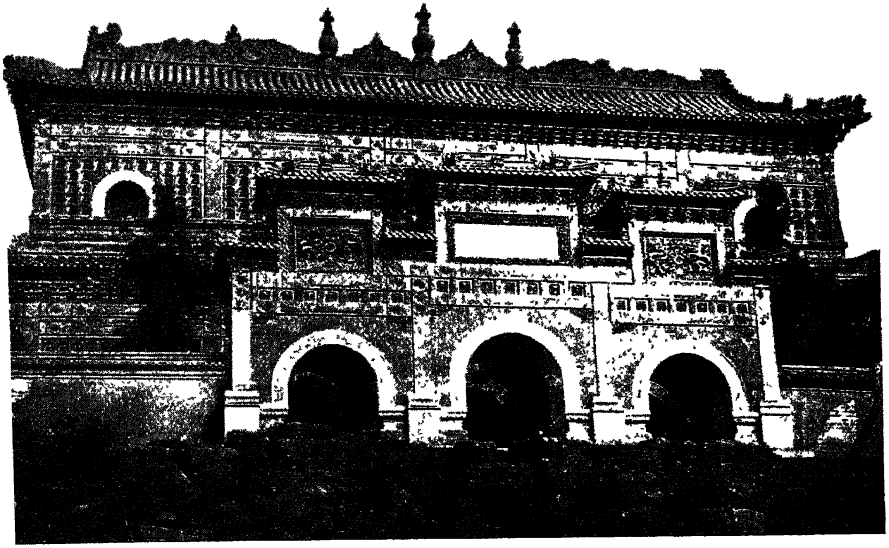
The laying out of towns was on a well-recognised plan, regulated by their importance. There are four classes, mostly quadrilateral or circular, protected by walls and moats with four principal gates facing the cardinal points. Pekin, the capital, is a triple city—the outer is the Tartar city with an enclosing wall, 16 miles in length; within is the Imperial city, surrounded by a wall of 9 miles, while in the centre is the "Forbidden City" which contains the Imperial Palace (p. 811).

BRIDGES

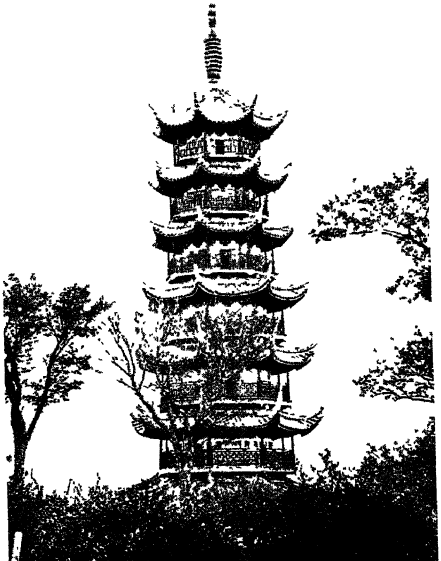
Bridges form conspicuous features in a country of rivers and waterways, and originally they were of timber in the form made familiar by willow-pattern plates. This timber type of construction was sometimes applied to the bearing arches of stone bridges, and their dilapidated condition shows the unwisdom of using stone in horizontal corbelled courses, instead of in radiating voussoirs. The Marble Bridge of seventeen arches in the Summer Palace, near Pekin, and the immense bridge across the river at Pusilanghi are, however, formed with radiating voussoirs to the arches.

THE GREAT WALL OF CHINA

The "**Great Wall**" (B.C. 214), the most famous of Chinese building undertakings, is 1,400 miles long, 20 to 30 ft. high, 25 ft. thick at the base, sloping to 15 ft. at the top. There are square towers at intervals in this immense mileage of masonry which, like Hadrian's Wall in England, follows the contour of the country, climbs mountain tops, descends deep gorges, strides across lofty table-lands, and spans wide rivers, like a huge snake wrought in stone.



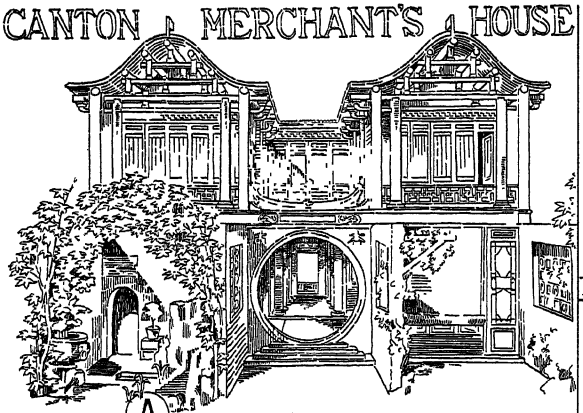
A. Emperor's Palace, Pekin



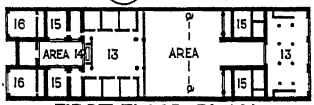
B. Typical Chinese Pagoda



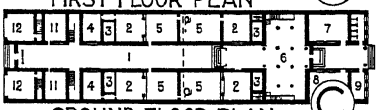
C. A Typical Pai-lou



A SECTIONAL VIEW ON a-a



FIRST FLOOR PLAN



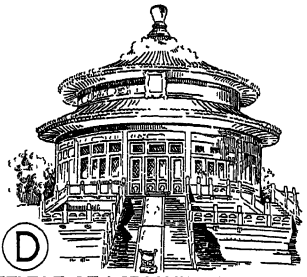
GROUND FLOOR PLAN

B C

50 0 50 100FT
10 0 10 20 30M

REFERENCE TABLE

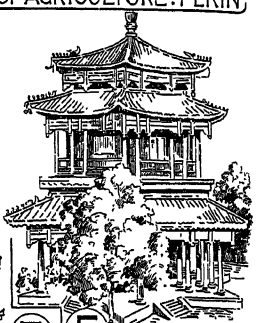
1 PASSAGE	11 OFFICES
2 RECEPTION RMS.	12 SHOP
3 BED ROOMS	13 LARGE RMS
4 STUDY	PARTIONED IN
5 OPEN COURTS	TO GUEST RMS.
6 DINING HALL	14 IDOL ALTAR
7 KITCHEN	15 FAMILY
8 SERVANTS RM	APARTMENTS
9 BATH ROOM	16 SHOPMENS
10 LAVATORIES	LODGINGS



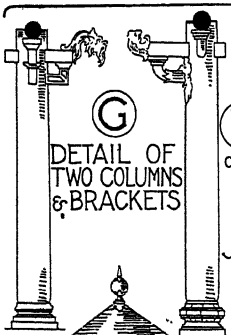
D TEMPLE OF AGRICULTURE: PEKIN



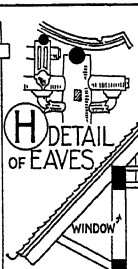
E TOWER: NANKIN



F PAVILION SUMMER PAL.: PEKIN



G DETAIL OF TWO COLUMNS & BRACKETS

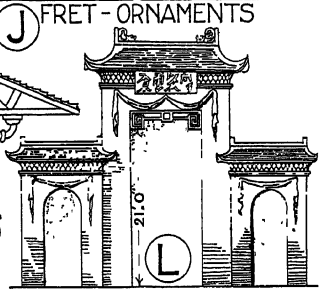


H DETAIL OF EAVES

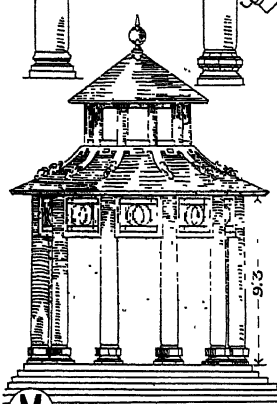


J FRET-ORNAMENTS

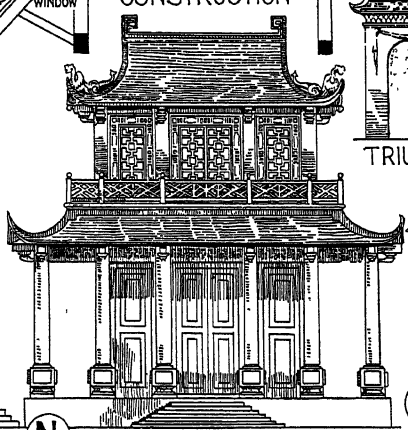
K ROOF CONSTRUCTION



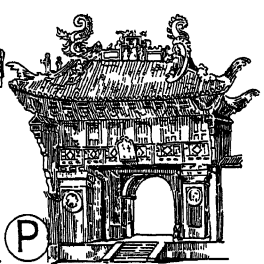
L TRIUMPHAL ARCH: CANTON



M GARDEN TEMPLE



N PAVILION: GREAT TEMPLE: CANTON



P GATE: TEMPLE OF CONFUCIUS

4. COMPARATIVE ANALYSIS

A. **Plans.**—Buddhist temples resemble those of India, consisting of successive open courts and porticoes with kitchens, refectories, and sleeping cells for the priests. The normal type consists of three lofty pavilions of one storey, with parallel open timber roofs, approached by broad flights of steps, gateways, and bridges. Houses, like temples, face south; the front door opens into a courtyard with rooms on either side and a hall at the end, followed by another and often by a third or women's court with garden beyond; while all windows, as in French fortified châteaux, face inwards.

B. **Walls.**—Stone is employed in important edifices, but ordinary building materials are brick and timber. Most Chinese buildings of wood are raised on a stone or brick platform as a protection against damp. Bricks sometimes have a glazed coloured surface and walls are also faced with glazed tiles or majolica. Walls are often constructed hollow, as described by Sir William Chambers, thus saving material and effecting a more equable temperature in the house. The " t'ais " or " pagodas " are of brick covered with highly-coloured glazed tiles or marble, and vary from three to thirteen storeys, each reduced in height and provided with projecting roof (pp. 813 B, 814 E). The verandah or portico of wooden columns is a special feature of dwelling-houses (p. 814 N).

C. **Openings.**—Doorways are square-headed, but varied in outline by fretted pendants from the horizontal timbers. " Pai-lous " are distinctive Chinese gateways (p. 813 C), sometimes as entrances to temples and tombs, sometimes as monuments to the deceased, and sometimes they stand across a street. Their construction is timber in origin, and they consist of two or more upright posts with horizontal frieze, making one, two, or three openings, sometimes surmounted by a series of brackets like those under the temple eaves. Windows are of similar form, suiting the rectangular framing of timber posts or lashing together of bamboos (p. 817). They are frequently filled in with the lining of the oyster shell, which is as transparent as talc and admits an effective subdued light. Glass is seldom found in native windows, and rice paper is often used as a substitute.

D. **Roofs.**—The roof is the principal feature of the building, and contrasts strongly with the Greek, Roman, and Renaissance styles, in which there is often an evident endeavour to hide the roof, whereas the Chinese roof-ridges are laden with elaborate ornamental cresting and the up-tilted angles are finished off with fantastic dragons and grotesque ornament. It is considered a sign of dignity to place roofs one over the other, and this system also serves to protect the interior from extremes of heat and cold. The framing of the characteristic T'ing roof with " I'rimoya " gables is of open timber construction and is supported on wooden posts independent of the enclosing walls (pp. 813, 814). Roofs, which are concave in section, are generally covered with enamelled tiles of S shape (pantiles) set in mortar, which is also used to form cover-joints as a protection from the driving winds (p. 817). Some derive this hollow curved roof from a " tent " origin; others think it resulted from the use of bamboos which bend under weight, but more probably it was designed to shelter the house from the direct rays of the sun, while admitting light to the rooms, and to protect the flimsy walls and throw the rain-water clear of the building. The roof-framing consists of a system of trusses in rigid rectangles (not triangles as in Europe) formed of bambocs held together by wooden tenons, and thus the weight of the roof acts

vertically and no oblique thrust comes on the walls (p. 814 H, K). The lightness and strength of bamboo were important factors in influencing a system of construction quite different from the framed European roof-truss. The connection between the roof and the pillars which sustain it is often strengthened by brackets, and the soffits are often divided into square or octagonal coffers by means of raised ribs with brass socketings at their intersection.

E. **Columns.**—Chinese building procedure as applied to columns is peculiar, and is the reverse of that in other countries ; for instead of first raising the columns and framing the superstructure upon them, the Chinese first made the framework of the roof and that determined the position of the columns, which were often of cedar-wood, while the rigidity of the framework and roof-beams was relied on to keep the columns in position on the stone foundations ; in short, instead of putting the roof on the columns, they put the columns under the roof (p. 814 G, M, N). It was therefore essential that the roof beams should be tenoned direct at the various heights into the shaft, without the intervention of a second member or capital, which was therefore omitted, but the roof beams were supported by brackets, often multiplied in number and ornate in character. Chinese columns, whether for temples, pai-lous, palaces, or houses, are unique, for in all other styles the capital is one of the most important of architectural features. Columns, whether free-standing, as in palace halls, or carried up as an integral part of the wall, were without capitals, and were bound direct to the roof beams of the rectangular-framed roof which press vertically down on them, and thus columns and roofs are the chief features of the T'ing type of building, in which the walls of half-baked bricks are of no constructive value.

F. **Mouldings.**—In China, where roof and columns are the chief architectural features, and where building is generally in brick or timber and much of the ornament is in glazed tiles, mouldings play a small part in decoration. In fact, here as in other styles where wall tiling came in, mouldings went out. They are seen in the cyma and ovolo of the bronze bases of timber pillars, but as there are no capitals they do not appear again in the columns ; simple mouldings, however, occur in the compound brackets supporting the roof timbers, which are chiefly treated with grotesque carving. They are also used in the panelled railing round temple enclosures, but in temples and pagodas the chief relief is found in the boldly projecting up-lifted eaves of the superimposed roofs (pp. 813, 814).

G. **Ornament** (p. 814).—Chinese ornament expresses national characteristics. All Eastern nations appear to have a natural instinct for colour, and the Chinese are no exception. Colour schemes form an integral part of Chinese architecture ; roofs are covered with brightly glazed tiles, yellow for imperial palaces, red for mandarins, and blue, green, or purple for others, while the outstanding ridges and hips are emphasised with highly coloured dragons, fishes, and grotesque figures in glazed terra-cotta. Coloured ornament is applied to buildings in the form of enamelled glazed tiles, painted woodwork, landscape and figure subjects. The Chinese excel in the minor arts, in silk- and cotton-weaving, in carvings of wood and ivory, and in porcelain ware. The triple umbrella, one of the most important insignia of the Emperor of China, is an old symbol of dominion and power, and is probably the origin of the triple roofs of Imperial palaces and of the many-roofed pagodas. The Chinese national sense for art found its outlet not in architecture, but in painting, of which from early times there were several

great schools. The Chinese were past masters in the use of the brush, with which they produced a wonderful fineness of line, as is seen in their caligraphy, for which they used a soft brush instead of a hard stylo. Thus it was that their decoration in architecture took the form of colour applied to surfaces on which were painted landscapes, birds, and flowers; for they preferred to portray the fields and forests of nature rather than buildings raised by the device of man. The Buddhist religion encouraged their love of mystery and symbolism, and the great yellow dragon, emblematic of the power of the spirit, and the tiger, symbolic of the forces of nature, were freely introduced into decorative colour schemes.

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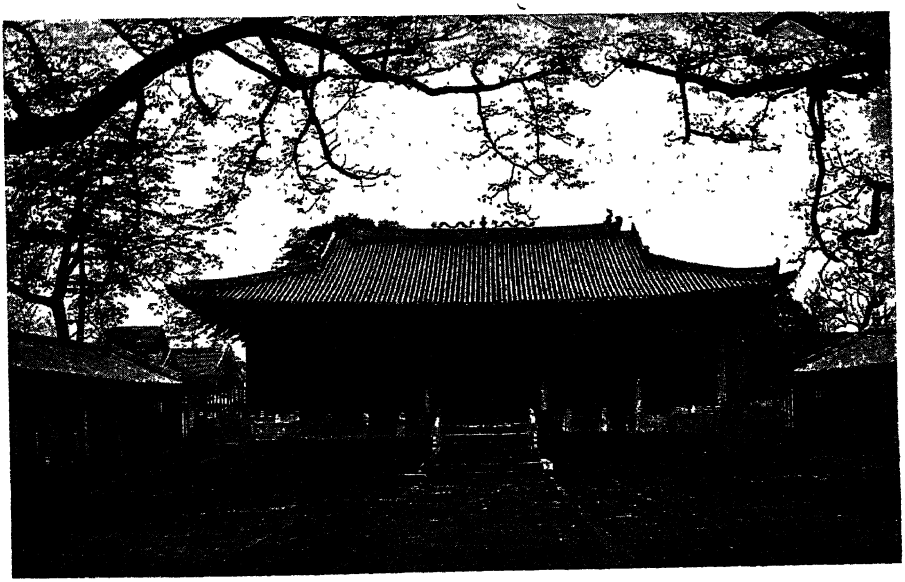
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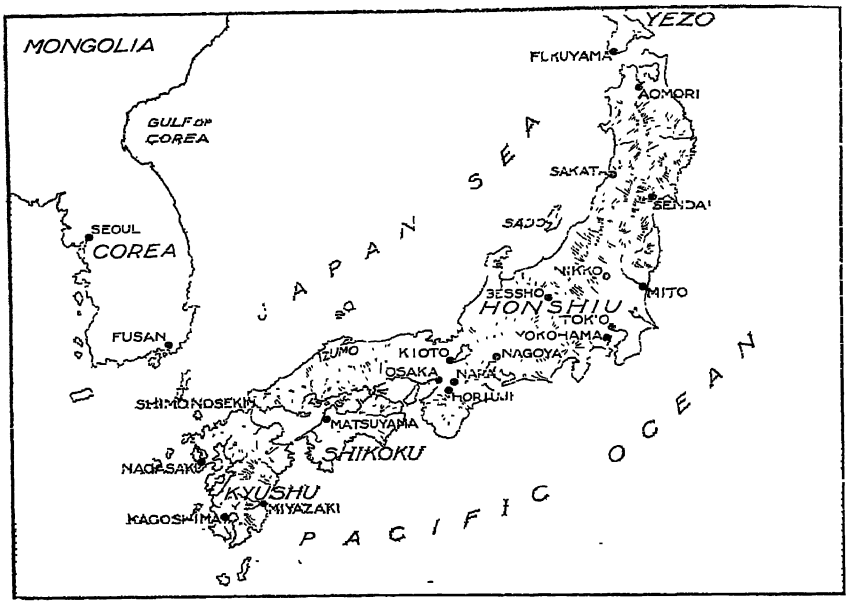
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TEMPLE AT CANTON



JAPAN

JAPANESE ARCHITECTURE

1. INFLUENCES

i. Geographical.—Japan, with its principal island, Nippon, and the long string of attendant isles to north and south, lies off the east coast of China, with the Pacific Ocean to the east and the Sea of Japan on the west. Japan presents many points of geographical resemblance to Great Britain: both have deeply indented coast-lines with good harbours; both are island empires well situated for commerce, as they both lie opposite populous continents; both are at the head of great ocean water-ways, the one of the Pacific, the other of the Atlantic, and both are warmed by ocean currents producing equable temperatures.

ii. Geological.—The prevalence of earthquakes has favoured timber construction, and the Japanese exhibit scientific ingenuity in the framing together of the various parts. Forests occupy four times the area of the tilled land, with a greater diversity of trees than any other country in the world, and bamboo is largely used in house construction. Stone in Japan is unstratified, hence it is frequently used in polygonal blocks, particularly for the lower part of walls on which is erected the upper timber construction. There are granites, porphyries, and volcanic rocks, but practically no limestones or sandstones.

iii. Climatic.—The island climate is made equable by ocean currents and by the prevalence of sea breezes. Houses, where possible, face the south, and deeply projecting eaves form a protection against the summer sun, and high courtyard walls against the winter wind. In summer the movable

casement windows and partitions, which form the house fronts and offer little resistance to the penetration of heat, are removed, and so leave the houses entirely open to the breezes.

iv. Religious.—Shintô was the indigenous religion which, without any definite moral code, consisted of ancestor and nature worship and did not involve a desire for graven images or elaborate temples. It was, like the Taoism of China, finally absorbed by Buddhism, which had been brought from China about A.D. 550. The Buddhist religion introduced the building of temples, while its mysterious and awe-inspiring symbolism so acted on the artistic Japanese temperament as to result in the production of numberless images of every possible size, and of various fantastic forms of demons and monsters, woven into conventional representations of landscapes under the changing seasons. In early times the priests contributed to the general development of the country, even in the matter of road-making and bridge-building, as in Mediæval Europe.

v. Social.—Japan is credited with civilisation, culture, and commerce even before the historic period, which commences about A.D. 400, when Chinese civilisation, arts, and social customs came into Japan through Corea, with a consequent increase in the building of canals, roads, bridges, and houses. Buddhism, too, brought in its train further Chinese ideas, and domestic architecture in Japan advanced along the lines of temple structure. Social conditions were long unstable; intrigue against the Imperial house raged incessantly, superstition was rampant, divination was practised, and abuses flourished. In the seventh century reforms began under Kotoku; governors registered land and labour, administration of justice was improved, bribery forbidden, great estates were limited, and taxes took the place of forced labour, while Imperial tomb-building, which had, as in Egypt, laid heavy burdens on the people, was limited by law. The Emperor became a mere emblem of authority with a civil bureaucracy and military "Shoguns." When the capital, which had changed with every emperor, ceased to be mobile, the city of Nara was laid out with nine gates, a palace, and seven great temples. When later Kiô-to became the capital (A.D. 794) the art of domestic architecture and landscape gardening made great strides. Through various vicissitudes and Shogun aggressions Buddhism waxed stronger, and fortified monasteries were multiplied. Feudalism, which was at its height in the thirteenth century, recognised three groups—the Emperor and nobles, the military, and the people. Under the Tokugawa Dynasty (A.D. 1598) the divine descent of the Mikado was emphasised, and, after continual strife between civil and military authorities, the last of the Shoguns resigned in A.D. 1867. Then the people began to be considered, so that the constitution was promulgated in A.D. 1890, and representative government laid the foundation of the present progressive position of Japan. The ancient national custom of tea-drinking influenced the arts, and the formation of tea clubs led to a special treatment of tea-houses, buildings, and gardens, the size of which was regulated by law.

vi. Historical.—While the domestic or social history of Japan in early times is dim and mythical, her external history through all ages is vague and largely non-existent, owing to the frequent exclusion of all foreign intercourse. The Japanese, however, date back their unbroken dynasty of Mikados to the Emperor Jummu, who is said to have ascended the throne as early as B.C. 660, which would make him contemporary with Nebuchadnezzar. Written records only begin with A.D. 712, but there is evidence of Chinese

social influence in Japan as early as the seventh century, which seems to have created a distinction between civil and military classes. Oversea trade was always regarded in Japan as a government monopoly, and thus there was no incentive for individual enterprise in foreign commerce, which in other countries has always been an emissary of international civilisation. Foreign intercourse, which was intermittent, was carried on with China and Corea as early as the eighth century of our era, but it was not until A.D. 1543, when the Portuguese discovered and began trading with the islands, that Japan was brought into contact with Europeans. In A.D. 1549 S. Francis Xavier introduced Christianity, and started a Christian propaganda which led to many conflicts. In A.D. 1582 the first Japanese envoys sailed for Europe and came in contact with the art and customs of Portugal, Spain, and Italy, and in A.D. 1592 the Japanese invaded Corea. The pendulum, however, swung back once more, and in A.D. 1614 all foreign priests were expelled and their churches demolished ; Spaniards were driven out in A.D. 1624 and Portuguese in A.D. 1638, when Christianity was finally interdicted and Japan was closed to the outside world for nearly 200 years. In A.D. 1854 commercial treaties were entered into with America and with European countries, when Japan came under Dutch and Russian influence and felt the effect of American enterprise and English institutions. After this came the war with China, while in A.D. 1914 Japan joined in the great alliance against Germany.

2. ARCHITECTURAL CHARACTER

Japanese architecture was largely derived from China, but has its own special character of minuteness in carving and decoration which gives it a graceful lightness and delicacy of design, contrasting forcibly with that of Egypt and Rome, in which the great idea was vastness of size and grandeur of proportion. This quality of refinement is introduced in their timber constructions with such artistic skill as to render them akin to fine joinery. Japanese architecture is specially notable for sloping and curved roofs, forming a contrast with that of Egypt and India, where flat terrace roofs predominate. The projecting roofs, ornamented with dragons and other fabulous monsters, are supported on a succession of small brackets and are most striking features (p. 823). Japanese temple architecture, though it started under Chinese influence, did not depend for impressiveness on the monotonous repetition of the same feature, but owes much of its character to the well-balanced symmetry of the various parts, and this is produced by restrained variety rather than by mere formality of treatment ; while interiors depend on their world-famous decorative art, which covered wall and roof with a lavish use of gold and brilliant colouring, well suited to the subdued light of Buddhist temples. Gateways, belfries, quaint gardens, summer houses, rustic arbours, and fish ponds form a delightful setting to the main structure.

3. EXAMPLES

TEMPLES

The **Buddhist Temples** at **Hôriuji, Nara,** and **Nikkô,** like other examples, underwent little change from Chinese models, but the mountainous character of the country made it possible to form natural steps and terraces to the temple sites, instead of the built-up, stepped platforms of China ; while avenues of trees and long rows of standard lanterns in stone or bronze produce a picturesque effect against a sombre wooded background. The

temples consist of isolated structures, generally within three concentric enclosures, the outer with a low wall, the second utilised as a priests' promenade, and the third containing the temple, surrounded by a lofty screen-wall covered by a tile roof. The temples are raised on a stone base about five feet above the ground, and are reached by steps which lead to a verandah protected by the widely projecting roof of the temple in the centre, as at the **Temple of Miyo-Jin-Kanda, Tokio** (p. 823 A). The mortuary temples of the Shoguns, Tokio, count among the famous buildings of Japan.

The **Buddhist Temple of Hommonji, near Tokio,** has a two-storeyed gateway, and besides the main temple there is a founder's hall, reliquary, library, reception and priests' rooms, kitchens, drum-tower, and pagoda. Tiles were used for the roofing, instead of the thatch of Shintô shrines.

The **Shintô Temple of Izumo** is a series of simple, one-storeyed buildings which are shrines rather than temples, and therefore, like other Shintô structures, have little architectural importance. The main shrine, within a triple enclosure, is approached through many gigantic gateways which, with the roof thatch, are distinguishing features of Shintô shrines. Other buildings include library, treasure-house, dancing-stage, great hall, and secondary shrines.

The **Kurodani Temple, Kiô-to** (p. 824 A), is situated in the midst of a garden cemetery.

PAGODAS

Pagodas were introduced with Buddhism from China, but those now standing mostly date from the seventeenth century, and are attached to important temples. They are square in plan, mostly five-storeyed, about 150 ft. high, and built of timber to withstand earthquakes; the lower storey contains images and shrines, while the upper storeys serve as "belvederes" and have projecting roofs supporting bronze bells.

The **Pagoda, Hôriuji,** the earliest example remaining, is on a concrete base, and is said to have been built by Coreans in A.D. 607. It has five storeys of gradually diminishing width and each is provided with a boldly projecting roof carried on brackets, while the whole is surmounted by a curious finial of metal rings and bells, supported by the great central post 100 ft. high and 3 ft. square at the base.

The **Pagoda, Hokiji** (A.D. 646), is a beautiful example, which, though probably by a Japanese master, followed the Corean tradition of the Hôriuji type.

The **Pagoda, Yakushiji** (A.D. 680), a three-storeyed example, is one of the earliest works by native architects, thus constituting the beginning of a national style, more graceful than the Corean buildings at Hôriuji.

The **Pagoda, Bessho,** is an octagonal four-storeyed example, while the **Tenno-ji Pagoda, Osaka** (p. 823 G), with elaborate brackets displaying dragons and unicorns, and the **Pagoda, Yasaka** (A.D. 1618) (p. 824 B), a fine typical example, are five-storeyed pagodas.

TOMBS

The **Tomb of Ieyasu, Nikkô,** has a triple enclosure with three pai-lous like a Buddhist temple, and is an over-elaborate design indicating the decadent character of the later period, in which ornament has no constructive meaning and design has lost restraint and simplicity. It is typical of many others, with flights of steps to the mortuary chapel and tomb-chambers, and besides these chief buildings there are priests' chambers, store-houses, and a pagoda.

The tombs of the Shoguns, Tokio, are famous examples of Japanese art.

PALACES

Palaces were erected with each change of Emperor, as capital succeeded capital, and were of simple type and generally consisted of a principal hall, joined by corridors to three pavilions, for the Imperial family. Since the sixteenth century palaces have been surrounded by walls often of concave slope and tilted quoin stones, to resist earthquakes, and with an encircling moat.

The **Mikado's Palace, Kiô-to,** is typical, with one storey, covered with a roof having "I'rimoya" gables, like the temples, instead of one uniform slope. The various pavilions, which overlook fancifully laid out gardens, are connected by covered corridors. The pavilions themselves are divided into rooms by sliding screens 7 ft. high, and the external verandah, as in the small houses, forms the connecting corridor to these various rooms, the size of which is governed by the number of the floor mats, which are of regulated size, those in the Imperial palaces measuring 7 ft. by 3 ft. 6 ins. The residential block, about 100 ft. by 60 ft., is divided into fourteen rooms, including the Mikado's sleeping apartment and a throne-room with the Imperial daïs.

The **Palaces of the Shoguns,** reflecting the feudalism which prevailed in the later period (A.D. 1603–1868), are protected by moats and fortified enclosures, like the mediæval castles of England.

The **Kinkaku-ji** and **Ginkaku-ji, Kiô-to** (C. A.D. 1600), are very charming garden pavilions, originally covered with gold and silver leaf—a tendency to brilliant ornament which ran to excess in the later period.

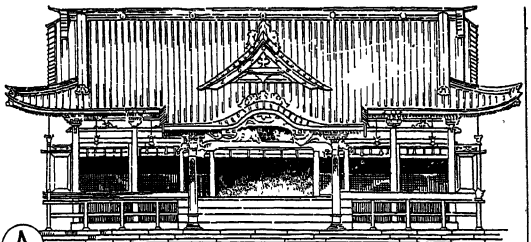
HOUSES

Houses are built of timber, and the consequent fear of fire has influenced the detached-pavilion treatment of the larger houses. A typical middle-class dwelling, except where a central court is adopted, is planned as a simple rectangle (p. 823 C, D), usually one storey high, with entrance, ante-room, living-rooms, kitchen, scullery, store-rooms, verandah, and garden. The size and shape of the rooms depend on the number of the floor mats, varying from 4 to 15, each measuring 6 ft. by 3 ft. Walls are constructed of slight, vertical posts and horizontal beams covered with weather-boarding. Internal partitions are formed of paper slides, 6 ft. high, with plastered or wooden frieze above them, and the screen can be slid aside so as to make the interior into one room, while the partitions on to the verandah are formed of sliding shutters. No distinction is made between living and bedrooms. Two main reception-rooms form a suite, the further one of which, a step higher than the other, has two recesses—a feature peculiar to Japanese houses—one for a picture and a vase of flowers, the other for the display of a selection of the art treasures, kept in a "go-down" with clay walls, which acts as a fireproof store.

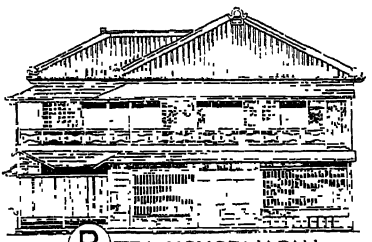
In some of the larger houses the influence of European civilisation has resulted in the erection of an adjacent wing containing rooms in the "Western" style.

INNS

The **Shukin-ro, Nagoya,** is typical of Japanese inns, which resemble private houses in general treatment, but are planned round courtyards overlooked by galleries on the upper floors, as in mediæval inns and in some of the Georgian inns of London.

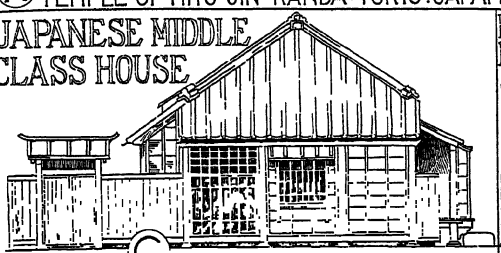


A TEMPLE OF MIYO-JIN-KANDA-TOKIO: JAPAN

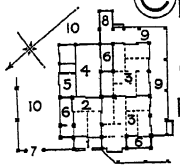


B TEA HOUSE: JAPAN

JAPANESE MIDDLE CLASS HOUSE



C FRONT ELEVATION

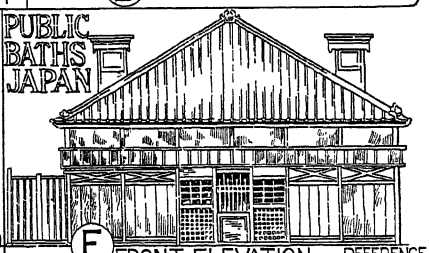


D PLAN

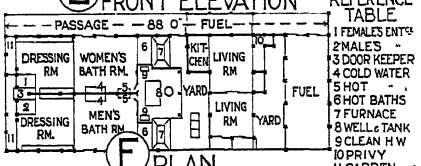
REFERENCE TABLE

1 ENTRANCE	6 CLOSETS
2 ANTE ROOM	7 BACK ENTRANCE
3 LIVING ROOMS	8 PRIVY ETC.
4 KITCHEN	9 VERANDAH
5 SCULLERY	10 ENCLOSED SPACE

PUBLIC BATHS JAPAN



E FRONT ELEVATION



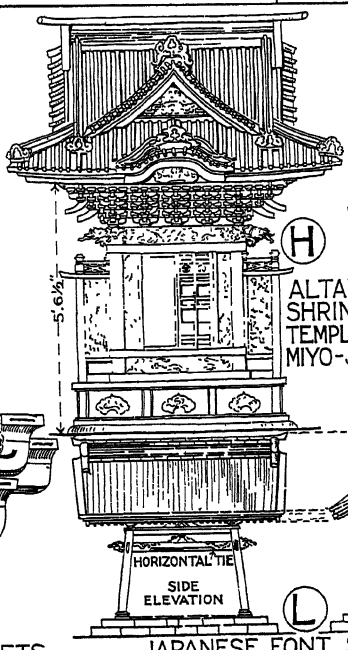
F PLAN

REFERENCE TABLE

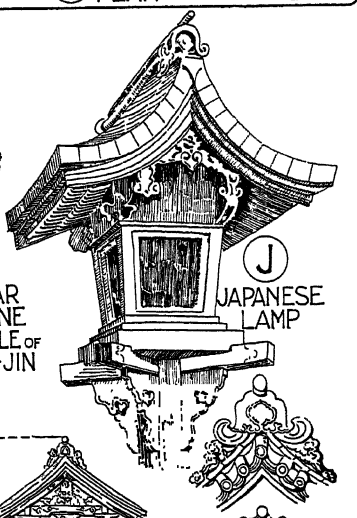
1 FEMALE'S ENT^CE
2 MALE'S "
3 DOOR KEEPER
4 COLD WATER
5 HOT "
6 HOT BATHS
7 FURNACE
8 WELL & TANK
9 CLEAN H W
10 PRIVY
11 GARDEN



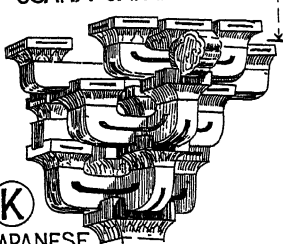
G TENNO-JI PAGODA OSAKA: JAPAN



H ALTAR SHRINE TEMPLE OF MIYO-JIN



J JAPANESE LAMP



K JAPANESE COMPOUND BRACKETS

L JAPANESE FONT SHED



M GABLE ENDS



A. Kurodani Temple, Kiô-to



B. Pagoda, Yasaka

TEA-HOUSES

Tea-houses (p. 823 B), which are the resort of the fashionable world, are distinctly Japanese social institutions, and not public restaurants. They are built for the tea-drinking ceremony, which is a cult in itself, and closely associated with the Japanese love of peace. Typically indigenous in style, tea-houses are on a small and dainty scale, and their size is regulated by the number of floor mats, down to a single-mat room, measuring only 6 ft. by 3 ft., but there is always the inevitable recess for pictures and a flower vase. Much architectural care is lavished on these little buildings, which are most artfully contrived ; while no detail of ventilation, light, and decoration is neglected. The guest-entrance is usually approached by stepping-stones, through pleasure-gardens with flower-borders, stone lanterns, water-courses, and trees, which appeal to the sense of beauty of the guests and form a delightful setting to the tea-house, the small central fane consecrated to the tea-drinking ceremony.

TOWN-PLANNING

Town-planning is seen in the city of Nara, which, when it became the capital in the eighth century, was laid out on the plan of Pekin, with a central avenue to the palace and four parallel streets on either side, crossed by others at right angles. When the capital was removed to Kiô-to, palaces, mansions, and houses were all on a grander scale, but were still box-like in appearance, and this indeed was the general effect of the whole town, which was laid out in a series of rectangular blocks like a modern American city. Tokio (Yedo), the present capital, is less regular in plan, and depends for its form largely on its site and on its network of waterways ; besides which it has been repeatedly burnt down, and the city of to-day is the result of street widenings and modern improvements, and indeed everywhere in Japan the old order gives way to the new.

Other buildings erected in connection with town-planning are restaurants, hotels, theatres, and public baths (p. 823 E).

4. COMPARATIVE ANALYSIS

A. **Plans.**—Shintô temples are distinguished from Buddhist by having " torii " or gateways of upright pillars supporting two or more transverse beams, under which it is considered necessary to pass for prayers to be effectual. Japanese houses are entered through a vestibule, and have a verandah, dining-, living-, and guest-rooms, with recesses for pictures and vase, and art treasures. There are also rooms for the host and hostess, but no bedrooms proper, as any room becomes a sleeping-room at will, by spreading mattress and coverlet from the side cupboard on to the floor. House treasures are kept in the " go-down " or strong-room. Screens are used to divide spaces, and are also removed to throw the whole house open to the gardens. The size of rooms is regulated by mats (tatami) used as floor coverings, which measure one " ken " (6 ft.) by one " half-ken," each room being some multiple of these (p. 823 D, F). Royal mats are 7 ft. by 3 ft. 6 ins. Houses owe their bright and cheerful character to their setting in gardens with hanging flowers, fountains, rockery, water, and stepping-stones.

B. **Walls.**—Most houses are of wood-framing and card board, which is safer in the frequent earthquakes than stone or brick. Temple walls are formed of timber posts and rails dividing the surfaces into regular oblong

spaces, filled in with plaster, boarding, or carved and painted panels (p. 823 A). Light is introduced principally through the doorways. An elaborate system of cornice-bracketing forms one of the most characteristic features of Japanese buildings (p. 823). Immediately above the pillars there is a highly decorated frieze-like space, and over this the bracketing consists of a series of projecting wooden corbels supporting horizontal beams and rafters with decorated faces, the total projection of the roof beyond the wall often being as much as 8 ft. The disposition of pillars, posts, brackets, and rafters forming these cornices appears to be according to well-recognised modules of measurement, with which we may compare the standards of proportions for the Orders laid down by Vitruvius and the Renaissance architects (p. 542). Optical illusions are sometimes corrected by cambering the underside of beams (cf. Greek architecture, p. 71).

C. **Openings.**—Owing to the great projection of roofs over the window openings there is little direct light from the sky, and much of the light in the interior is reflected up from the ground. Windows are filled in with trellis-work and wooden shutters on the outside and paper slides on the inside, and are protected under verandahs (p. 823). Temples are approached by "torii" or gateways, formed of plain uprights and horizontal beams for primitive Shintô temples, and elaborate two-storeyed structures, surmounted by a muniment room with ornate roof, for Buddhist temples.

D. **Roofs.**—The roofs bear a general resemblance to those of China, but as a rule are simpler in treatment (p. 823). The method of terminating the upper part of the roof, as in China, in a gable vertically above the end wall (known as an "I'rimoya" gable) while carrying the lower part round the ends in a hipped form, produces a combination roof which is half hipped and half gabled (p. 823 A, H). The covering is of shingles, thatch, or tiles. Thatched roofs often have a prominent protecting ridge of tiles with an exaggerated cresting which gives a top-heavy appearance to the building, or the ridge may be of stout bamboos tied up with blackened rope and finished with finials. Tiled roofs have flattish and roll tiles alternately, while cover tiles, like antefixæ (p. 861), are used to hide the joints at the eaves. Ridges and hips are made up of layers of tiles in mortar, finished with large moulded tile capping and crestings. A lower roof, known as "hisashi," sometimes projects below the eaves of the main roof. Hollowed bamboos form the roof gutters and down-pipes. The gable ends often have cusped barge-boards with pendants (p. 823 H, J, M).

E. **Columns.**—Columns, which followed the Chinese type, are conspicuous in Japanese temple buildings and in the bays of the façades of palaces and gateways. In temples there was generally a columned loggia, either round three sides or forming a façade, and the outer columns are braced to the columns of the main building; besides this there is often a portico over the approach steps which rests on timber columns, held together at the top by horizontal tie-beams, above which are the cornice brackets to the roof. In large temples and halls the internal columns are provided with much compound bracketing to support the roof. Intercolumniation is regulated by a standard of about six feet called a "ken," which is divided into twenty minutes, each minute being divided into twenty-two seconds of space. Columns when square are panelled, and when round or octagonal are reeded, and are often richly lacquered, while the upper part is painted in embroidery patterns. Columns are sometimes made to incline inwards instead of being vertical, probably on account of earthquakes.

F. **Mouldings.**—Just as Japanese roofs and columns are of the same material as those of China, so is there a similar absence of mouldings. The decoration of the walls, too, is largely of tiles or glazed faïence, and wherever this occurs, mouldings, as in Byzantine architecture, become unimportant, and to this Japan, like China, is no exception.

G. **Ornament.**—Coloured and carved panels forming enclosing walls, elaborate projecting eaves to roofs, and the " ramma " or pierced ventilating friezes under the cornices are characteristic. In the friezes, panels in high relief frequently occur, representing such subjects as the chrysanthemum, the jay, stork, and pine tree. Ornamental brass caps, incised in patterns and usually gilded to preserve them from corrosion, are sometimes fixed to ends of projecting timbers, to junctions of beams and pillars, to bases and neckings of posts and on doors in order to hide the connection of stiles and rails and open joints, due to shrinkage (p. 823). Embossed gilt metalwork is also liberally applied to gable-boards and pendants. Colour decoration, introduced from China in the sixth century, is very generally applied to the interior and exterior of Japanese temples. Beams, brackets, carvings, and flat spaces are picked out in gilding and bright colours, such as blue, green, purple, madder, and vermilion. Wall paintings are generally on a gold ground and represent animals, birds, and flowers. Supporting pillars are usually black, red, or gold. Frequent subjects for decoration are birds of bright plumage, such as cranes, peacocks, pheasants, and ducks, as well as flowers, water-plants, trees, bamboos, and lions, combined with weird and grotesque demons, resulting in a curious mixture of conventional, realistic, and symbolic forms. Japanese genius for decoration showed itself in their meticulous treatment of details rather than in originality of design, and it has produced marvellous textile pictures in embroidery and tapestry with architectural features, processions, figures, mountains, and sky. All the accessories of architectural design, lacquer-work, enamels, faïence, bronzes, and ivories vie with one another in minuteness of accuracy, softness of colour, and profusion of detail. Japanese art was largely inspired by Chinese, which it probably surpassed in everything except in the marvels of Nankin blue china, and in the world-famous paintings of " Old Cathay."

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ANCIENT AMERICAN ARCHITECTURE

THE indigenous architecture of Mexico and Peru owes most of its interest to its archæological aspect, and few words must suffice to explain its general character.

Mexico.—Aztec architecture existed from the twelfth century of our era to the Spanish Conquest by Hernando Cortes in A.D. 1520, and the ruins that remain are indicative of magnificence of scale rather than of architectural qualities.

Temples.—The pyramidal many-storeyed temples of ancient Mexico, known as " teocallis," resembled the ziggurats of Babylon, rising in receding terraces to the temple summit (p. 52).

The **Great Temple, Mexico City,** finished A.D. 1487, stood on an oblong pyramid, 375 ft. by 300 ft. at its base, rising in five terraces to a height of nearly 100 ft. On the temple platform were also tower-temples in three storeys, with images and altars, and the green stone for human sacrifice stood before the image of the war-god. Within the great enclosing wall, sculptured with serpents, were some seventy other temples with all the horrible paraphernalia connected with the rites of human sacrifice and feasts of cannibalism.

The **Great Temple, Cholula,** said to date back to the seventh century, consisted of a hemispherical temple on a flat-topped pyramidal base, and was even larger than the Great Temple, Mexico, but is now a shapeless mound of earth, crowned by a Christian church.

The pyramidal temples at **Teotihuacan** and **Tezcuco** are other large examples, while that at **Xochicalco,** said to date from A.D. 950, is a natural mound adapted for the purpose and cased with stone.

The **Pyramid, Oajaca,** has a one-storeyed platform sufficiently raised for religious ceremonies to be witnessed from below.

Many of the buildings discovered in Yucatan (Central America) have been ascribed to the thirteenth century of our era, and would, therefore, be contemporary with the Gothic style of Western Europe.

The **Temple Pyramid, Palenque,** which is typical of others, does not rise in stages but is sloped like an Egyptian pyramid and crowned by the temple proper, the roof of which is corbelled out internally as in Mycenæan art (p. 70).

Royal Palaces.—These appear to derive their character from timber types and to have been of one storey. These palaces were raised on platforms, which, however, did not form so outstanding a part of the structure as in the temples, and seem to have comprised numberless rooms round open courts with stone steps, terraces, aqueducts, and water basins, and, like the palaces of Babylon, to have had hanging gardens.

Groves of trees, flowers, birds, and fishes were all pressed into the service of the palace gardens. Provision for thousands of royal servants suggests the usual ancient story of despotic power, gangs of workers, and heavy burdens of taxation.

The **Royal Palace, Zayi** (p. iii), has three terraces, and the walls have cylindrical ornamentation in imitation of timber construction.

The **Palace, Uxmal** (" Casa de las Monjas "), was a monumental structure arranged round a spacious quadrangle and borne on a terraced platform, 20 ft. high, and has interesting chambers roofed in stone by corbelling the courses gradually toward the apex, as in early Greek art (p. 70).

Peru.—Cyclopean ruins of vast and apparently unfinished buildings exist at Huaraz in the north, at Tiahuanaco in the south, and Cuzco in the centre, which were erected by the Incas some three centuries before the conquest of Peru by Pizarro (A.D. 1532–36). They seem to have been the outcome of conditions of forced labour and royal vanity, similar to those which existed in ancient Egypt. They probably date from the twelfth century of our era and exhibit great skill in their construction, while the masonry is a marvel of stone-cutting and fineness of fitting, similar to early Etruscan work (p. 133).

The main difference between the architecture of Mexico and that of Peru is that the former was derived from timber originals while Peruvian work was derived from mud and eventually translated into stone.

The granite **gateways** at **Tiahuanaco,** in the style attributed to the Aymaras previous to A.D. 1021, have square-headed openings. In the time of the Incas, who followed, however, openings generally have sloping sides to reduce the span of the lintel—a type of construction which was used in Mycenæan art (p. 70 C) and survived in later Greek architecture (p. 115 D).

The **Towers, Sillustani,** which may date before the time of the Incas, were cylindrical structures of masonry used as receptacles for the bones of the deceased.

The **House of Manco Capac, Cuzco** (C. A.D. 1025), on a low one-storeyed platform, is a peculiar structure of polygonal masonry constructed on a curve, with square turrets at intervals, and tapering doorways which light the inner chambers.

The **House of the Virgins of the Sun, Cuzco** (p. iii), has tapering Etruscan-like doorways with lintels corbelled outside the jambs.

The **Walls of Cuzco** evidence the skill of the Peruvians in building fortifications with polygonal masonry, fitted together with great accuracy.

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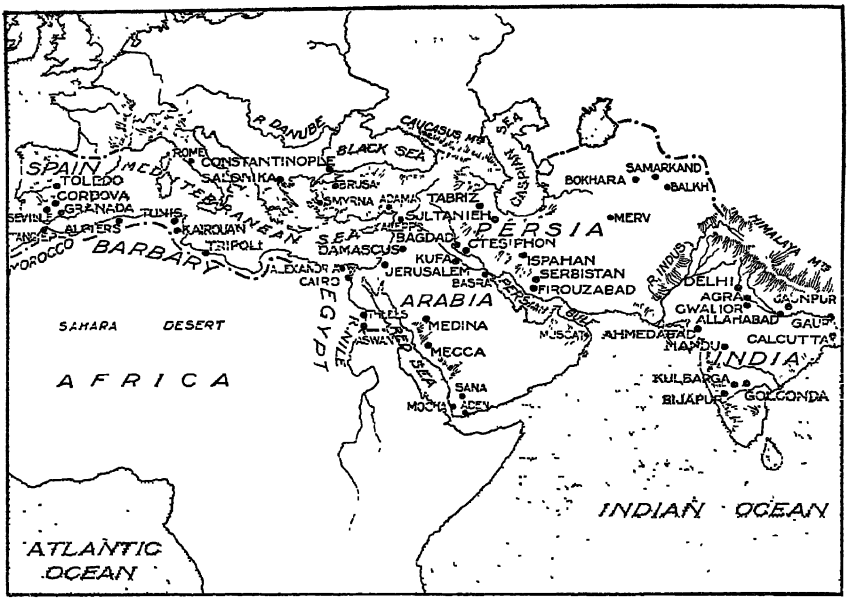
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O O



SARACENIC

SARACENIC ARCHITECTURE

1. INFLUENCES

i. Geographical.—The term Saracen, perhaps derived from "Sahara," a desert, was first applied by Greeks and Romans to nomad desert tribes west of the Euphrates, who harassed the borders of the Roman Empire, and the name was used by Christians in the Middle Ages for the followers of Mahomet, irrespective of nationality. Arabia, Persia, Mesopotamia, Syria, Palestine, Egypt, North Africa, and Spain were in turn, wholly or in part, subjected to the influence of the Mahometan religion, and India had a succession of Mahometan capitals in the upper valley of the Ganges, due to waves of invasion bursting through her north-west frontier. Saracenic or Mahometan architecture, as it is sometimes called, therefore differs from other styles in being the product of a religion rather than of a country, in contrast to that of ancient Rome, which everywhere represented the influence of a country rather than of a religion ; and, though the Saracenic style exhibited local divergences in treatment and detail, it prevailed in all countries brought under Mahometan influence.

ii. Geological.—The varying geological formation of the different countries provided every sort of building material—marble, stone, brick, timber, and plaster, each of which had its influence on building methods and somewhat modified the style in each country. Domes, for instance, were either of brick plastered externally and internally, as in Syria, or of stone, as in India, and were generally built in projecting horizontal courses, thus minimising oblique pressure on the supporting walls. In Spain, brick and

plaster, as the principal materials in use, were responsible for the rich decorative surface treatment. In North and Central India, where marble and red sandstone were available, a more monumental type was evolved, in which richness of surface decoration was obtained by the inlay of precious stones of the country.

iii. Climatic.—The climate of the countries in which the Mahometan faith gradually spread was not as varied as that of the Roman Empire ; for it was confined to Eastern and Southern countries, and thus the climatic influence did not, in itself, produce much difference in architectural treatment. Sheltering arcades and small doorways and windows prevailed, because of the fierce heat of the sun. Doorways, although small in themselves, were, however, in India given additional importance as forming part of the design of great entrance gateways (p. 854), and windows, already small, were filled in with delicate pierced screens. The coolness of mosques was further ensured by wide-spreading roof-eaves ; while, as is usual in Eastern countries, the flat house roof, with its screening parapet, provided a welcome resort in the cool of the evening.

iv. Religious.—The Mahometan faith was the last of the three great religions which have arisen from among the Semitic nations, and its essence is contained in the words from the Koran, " There is no God but Allah, and Mahomet is His prophet." The Koran was compiled by Mahomet (A.D. 570–632), with his own additions, from the Bible, Talmud, and Apocryphal Gospels. Most of the states which embraced Mahometanism—Syria, Persia, Egypt, North Africa, and Spain—had independent Caliphs who only yielded nominal obedience to the Chief Caliph, and this made for certain differences in architectural style. Each Caliph was both a spiritual and a temporal ruler ; and this union of religion and state was responsible for the numerous religious buildings erected by Caliphs to perpetuate their memory. The prohibition of the use in decoration and sculpture of human and animal forms probably led to the intricate geometrical surface decoration known as " arabesques," a form of ornament largely derived from Byzantine art (p. 861). Mahometans were fatalists (Islam = God's will be done), to whom the present was everything, and thus it was natural that they should have cared more for the transient beauty of decoration than for the permanent nature of buildings, whether religious or secular. They were satisfied on occasion to use poor and flimsy materials, such as plaster, provided it was disguised by abundance of surface ornament. Local traditions and varieties of national temperament, however, produced certain differences of treatment ; for in Egypt and India tomb houses of a permanent nature were constructed, such as the Tâj Mahal, Agra (p. 851), and these were used as pleasure houses during the life of the founder.

v. Social.—The war of conquest by which Islam was to subjugate the world is outlined below, and bears an important relation to the various developments of the style, according to the country of its adoption. It is manifest that the type would inevitably be subjected to certain changes to suit such different civilisations as those of Spain or of India, and the social life of each country, which came in turn under the influence of Islam, is responsible for the varying modifications of Saracenic architecture to suit local requirements and institutions. Architecture was also continually receiving an impetus by the building of new capitals for different dynasties. The position of women in the social system influenced the planning and design of palaces and houses, in consequence of the isolation of the harem. The harem system,

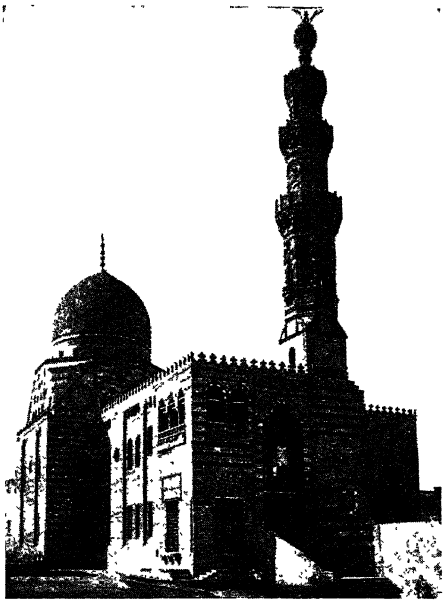
which is so general in the East, is of earlier origin than the Koran, and remains of Babylonian and Persian palaces show that it had even then given rise to a special distribution in house-planning ; for the seclusion of women in palaces of kings and nobles, with their innumerable attendants, required that the " haremlik " or women's quarters should be on one side, and the " selamlik " or men's quarters on the other side, with the private apartments of the owner in the centre for the reception of his male guests. In smaller town houses the harem is allocated to the upper floor, with a separate locked entrance, court-yard, and garden ; while the overhanging windows are filled in with intricate lattice-work designed to hide the women within. The Ten Commandments of the Mosaic dispensation contain a striking epitome of the social conditions of Eastern life, in the words " Thou shalt not covet . . . his ox or his ass." As it was then, so it is to-day ; the ox for draught work and the ass to carry his master have always summarised the material conditions of life in the unchanging East. The " Arabian Nights " describe Mahometan religion and customs and give the general atmosphere of life in the East. Omar Khayyám (A.D. 1075–1125), the great Persian astronomer-poet and philosopher-mathematician, reveals in his voluptuous verses the Persian pursuits of his day, while as a free-lance, though a friend of princes, he directed his epigrammatic satire against the narrow bigotry of orthodox believers.

vi. Historical.—Saracenic chronology commences with the year of the " Hejira " (A.D. 622) or flight of Mahomet from Mecca to Medina. The first four Caliphs, friends or kinsmen of Mahomet, were succeeded by the " Omayyads " at Damascus, and under this dynasty, which lasted till A.D. 750, the war was continually carried on which was intended to conquer the world for Mahometanism.

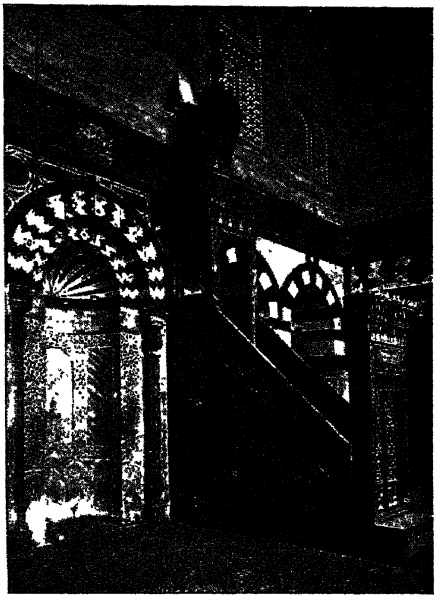
Persia was subjugated (A.D. 632–651) by the " Omayyads," who pushed east from Damascus to Kufa, and the country was ruled from this city till the " Omayyads " were overthrown in A.D. 750, when the " Abbasides " dynasty was founded by the descendants of Abbas, the uncle of Mahomet. Their newly-built capital, Bagdad, on the Tigris, then rose to importance and became the seat of the Eastern Caliphate till it was burnt and sacked in A.D. 1258. In the time of the Caliph Haroun-al-Raschid (A.D. 786–809) Bagdad became an important centre of the arts and sciences.

Syria was conquered about the same time (A.D. 632–639), and the falsely so-called " Mosque of Omar " or the Dome of the Rock on the Temple platform at Jerusalem was established in the year A.D. 688. The Mahometans held Jerusalem till A.D. 1099, when it was taken by Crusaders, but was recaptured by Saladin in A.D. 1187, and has remained under Turkish rule till occupied by the British in A.D. 1918.

Egypt fell in A.D. 638, but the foundation of Cairo by the Fatimite Dynasty dates from A.D. 971. Saladin, however, reconquered Egypt for the Abbaside Caliphate of Bagdad in A.D. 1171, but he himself founded a semi-independent dynasty which lasted till A.D. 1252. This Ayyubide dynasty was followed by the two Mameluke dynasties, which lasted till A.D. 1517 and were nominally under the Abbasides Caliphs, who, however, were dominated by the Sultans at Cairo. In A.D. 1517 Egypt became part of the Ottoman Empire and was ruled by Pashas from Constantinople till A.D. 1707, when the Mamelukes again became the rulers. The French occupation was followed by the restoration of Pashas in A.D. 1805 with hereditary rights, and their descendants were called Khedives, until in our own day the British instituted a Sultan of Egypt.



A. The Exterior

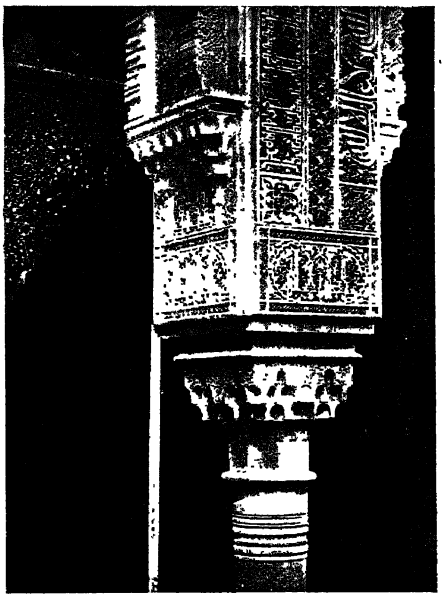


B. The Mihrab and Mimbar

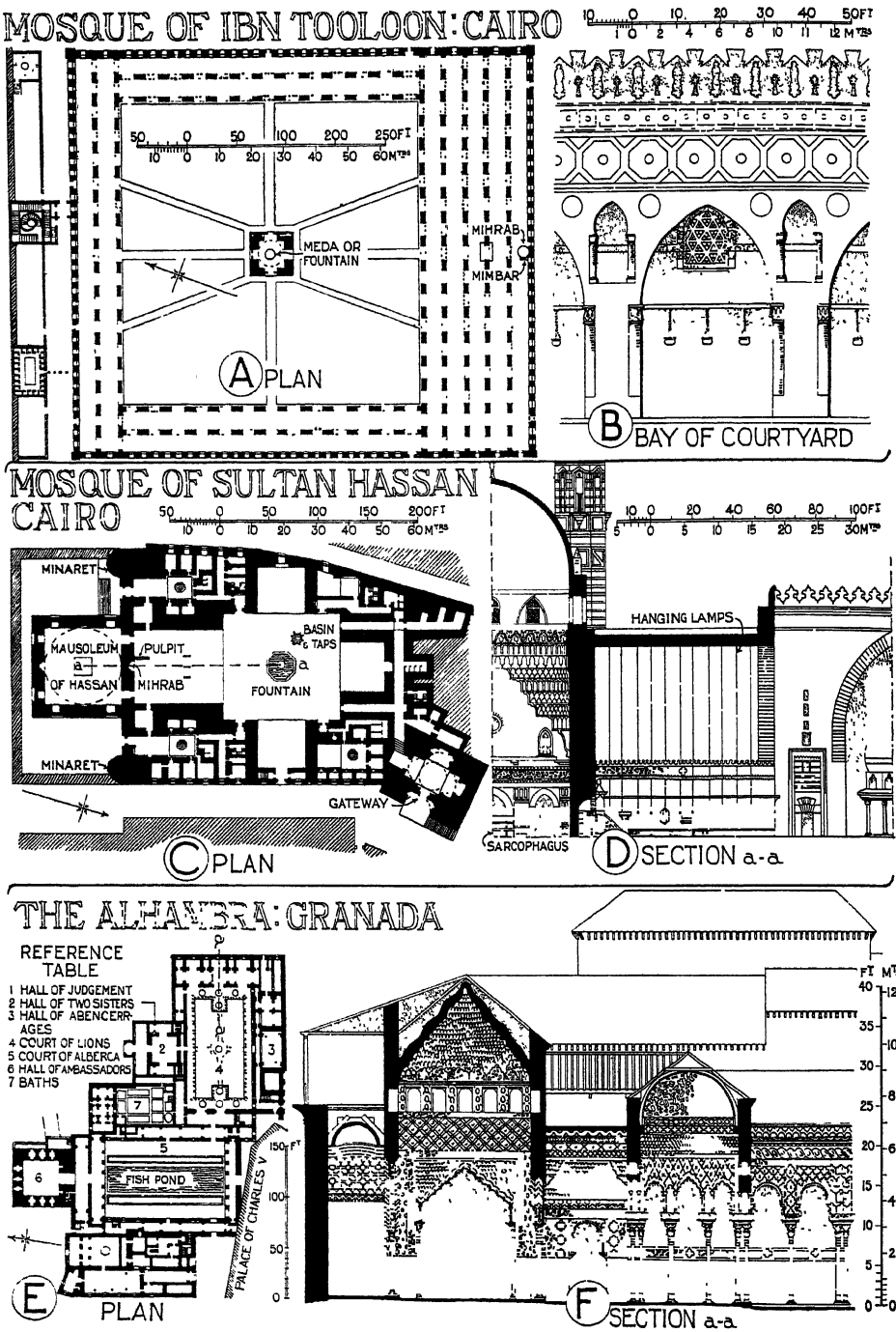
Mosque of Kait-Bey, Cairo



C. Mosque, Cordova : Interior



D. Alhambra, Granada : Stalactite Capital


MOSQUE OF IBN TOOLOON: CAIRO
MEDA OR FOUNTAIN
MIHRAB
MIMBAR
A PLAN
B BAY OF COURTYARD
MOSQUE OF SULTAN HASSAN CAIRO
MINARET
MAUSOLEUM OF HASSAN
PULPIT
MIHRAB
BASIN & TAPS
FOUNTAIN
MINARET
GATEWAY
C PLAN
HANGING LAMPS
SARCOPHAGUS
D SECTION a-a
THE ALHAMBRA: GRANADA
REFERENCE TABLE
1 HALL OF JUDGEMENT
2 HALL OF TWO SISTERS
3 HALL OF ABENCERRAGES
4 COURT OF LIONS
5 COURT OF ALBERCA
6 HALL OF AMBASSADORS
7 BATHS
FISH POND
PALACE OF CHARLES V
E PLAN
F SECTION a-a

North Africa was brought in, with Carthage (A.D. 647–709), and the foundation of the sacred city of Kairouan is commemorated in the Great Mosque of Omar, then built in that city of pilgrimage. Algiers, Tunis, Barbary, Tripoli, and Morocco, all bordering on the Mediterranean, formed connecting links between the style, as developed under the Eastern Caliphate at Bagdad and the Western Caliphate at Cordova.

Spain was overrun by the Mahometan Moors in A.D. 710, and the independent Western Caliphate was established at Cordova. During a period of general anarchy this was divided into the four states of Seville, Granada, Toledo, and Valentia, which were gradually recovered by the Christians in the fourteenth and fifteenth centuries, till the fall of Granada (A.D. 1492) marks the end of the Moorish rule in Spain.

Sicily, on the sea-route between East and West, naturally fell under the Moors in the eighth century; but their dominion was of short duration, for the island was recaptured by the Christians in A.D. 1090, though not before the Moors had grafted their peculiar style on the local architecture.

Turkey fell under the Seljûk Turks, who had commenced their conquering career under Osman I in Bithynia (A.D. 1299), and took Constantinople from the Christians in A.D. 1453. This important historical event marks the period of Byzantine influence on Saracenic architecture in Turkey; for S. Sophia, the great Byzantine cathedral, supplied henceforth the "motif" of the style.

India began to fall into the hands of Mahometan invaders in A.D. 1000. The Pathan dynasty (A.D. 1193–1554) ruled over the whole of North India; but after the death in A.D. 1316 of Mahomet Shah I, there gradually arose other independent states with capitals at Jaunpore, Ahmadâbâd, Mandu, Gaur, Kulbarga, Golconda, Bijapur, and elsewhere. The Mogul Empire (A.D. 1526–1857), founded by Bábar, consolidated the Moslem Empire by the gradual absorption of all these petty kingdoms. Akbar the Great (A.D. 1556–1605) first removed the capital from Delhi to Agra, and afterwards founded Futtehpore Sikri as the capital of the Empire, and in these cities are found the most famous buildings of the period. Sháh Jehán (A.D. 1628–58) raised the Mogul Empire to its highest pitch of strength and magnificence. He erected in North India many splendid memorials of the Mogul dynasty, such as the Tâj Mahal and the "Pearl Mosque" at Agra, the "Great Mosque" and Palace at Delhi with the celebrated "Dewan Khas" or court of audience. The Mogul Empire, however, rapidly declined in power (A.D. 1720–61) when invaders were pouring into Central Asia, while French and English traders were establishing the influence of their countries in the peninsula. British trade, under the East India Company, became powerful enough to inaugurate British rule, which was established by royal proclamation in A.D. 1858, when Queen Victoria assumed the government of India.

2. ARCHITECTURAL CHARACTER

The character of the style is difficult to describe because of its variation in countries whose inhabitants differed widely in origin, and where already existing types of architecture influenced that of the Saracen invaders. Followers of the Prophet established their faith in many lands, but nowhere did they carry a style of architecture with them. They were content to adopt that which had already been proved suitable to the locality, but upon all types which they appropriated was set the distinguishing seal of their

peculiar form of decoration and ornament. Mosques, tombs, and dwelling-houses are the chief buildings. Like Egyptian temples, mosques were of far greater architectural importance internally than externally. The disposition of the essential parts of a mosque (p. 853) is governed by ritual requirements. Interiors of earlier mosques are characterised by forests of columns which support arches under low flat roofs, while richly decorated walls and domes are features of later periods. The pointed arch, which came from its original home in Assyria (p. 60), was used, both internally and externally, as a symbol of the faith. The arch is either formed of two segments of a circle, or as a four-centred arch (p. 859), and is unmoulded, thus differing from the pointed arch of Gothic architecture. Pointed, horseshoe, multifoil, and ogee arches are all used (pp. 848, 859). The outline of a characteristic form of dome is obtained by revolving one half of a four-centred arch round a vertical axis passing through the summit. Exteriors are noticeable by reason of pointed or bulbous (pear-shaped) domes (p. 833 A), originally indicating a tomb beneath, and by lofty, graceful, and elaborately decorated minarets (= signal-posts or light-houses), used by the priests to call the faithful to prayer, and these mark off Saracenic religious buildings as unique and different from those of any other style. Dwelling-houses, too, are plain externally, and ornament is lavished on pavements, walls, and ceilings. Surface decoration is all-important, and its geometric character is largely due to the prohibition by the Koran of animal forms (p. 839). It is indeed on its decorative rather than its constructive side that Saracenic architecture is specially impressive. The characteristic "stalactite" vaulting (from Gk. *stalactos* = icicle-like), like the Byzantine "pendentive" (p. 227), was a device to bring a square plan to a circular base to carry the dome; but "stalactite" vaulting, instead of being treated as a plain surface like the Byzantine "pendentive," consisted of rows of upright pointed niches, rising in ranges one above the other, till the circle for the dome was formed. The use of rings of such niches to form the pyramidal roof of the Tomb of Zobeide, Bagdad, would suggest that this peculiar stalactite ornament was of Persian origin. The ornamental form thus produced was afterwards freely used in decoration, as in the bracketing of minaret galleries, the upper part of niches (p. 848 H), the capitals of columns (pp. 833 D, 848 F), and the crowning cornices of walls.

3. EXAMPLES

(*a*) Arabian.
(*b*) Syrian.
(*c*) Egyptian.
(*d*) Spanish.
(*e*) Persian.
(*f*) Turkish.
(*g*) Indian.

(*a*) ARABIAN SARACENIC

Arabia was the birthplace of the Mahometan religion, which there sprang up among a nomadic people who, as wanderers in the desert, had no permanent architecture. All that was required of the faithful was that they should pray at stated times, wherever they might find themselves, whether on trek in the desert, minding their flocks, or resting on the house-top, and that when they prayed they should turn towards the holy shrine at Mecca, and for this simple ritual no temple made with hands was essential. The one sacred spot, the one world-sanctuary, the "Kaabah" at Mecca,

was itself a stone tower of unpretentious appearance, cut off from the outside world by a " temenos " or sacred enclosure. Thus in Mecca and Medina, the two original pilgrimage-cities of the faithful, Mahometanism had no great buildings, for their need was not then recognised. It was quite different, however, when these nomadic tribes set out to conquer the world for their religion ; for when they found themselves among nations who were temple builders, they, too, adopted this material expression of their faith in competition with the religions they hoped to supplant.

The **Great Mosque, Mecca,** restored and enlarged by successive Egyptian Caliphs and by the Sultan of Turkey in the middle of the sixteenth century, consists of a rectangle, 570 ft. by 380 ft., surrounded by arcades of pointed arches and an outer enclosing wall, with numerous gateways and minarets. In the centre of the Court is the " Kaabah " or holy shrine to which the " kibleh " in the " mihrab " (niche) of all other mosques must point ; so that the faithful may turn towards Mecca when they pray, in accordance with the instructions of the Koran.

(*b*) SYRIAN SARACENIC

The **Mosque-el-Aksah, Jerusalem** (A.D. 691), is regarded as one of the ancient shrines of Islam and commemorates the supposed miraculous transport of the prophet from Mecca, in a single night, to the great Temple platform in Jerusalem, sacred alike to Jews, Christians, and Mahometans. Here probably stood a basilican church of Justinian, with nave and aisles to which double aisles were afterwards added, and this was probably converted into a mosque, enlarged and beautified by Abd-el-Melik (A.D. 691). Several times injured by earthquakes, it was as frequently restored, so that there is little left of Justinian's church beyond the general plan and a few truncated columns. Some acanthus capitals remain to show how dependent Saracenic builders were upon Greek craftsmen, and above these capitals is that peculiar Arab feature, the long connecting beam below the characteristic pointed arches. Saladin (A.D. 1187), too, had a hand in the restoration of this important mosque ; for he introduced glowing mosaics from Constantinople and added the " mihrab " or prayer-niche.

The **Dome of the Rock, Jerusalem** (A.D. 688), the so-called " Mosque of Omar," occupies a spot on the Temple platform sacred from time immemorial ; for there had stood successively the Altar of David, the Temple of Solomon, the Temple erected by the Jews after their exile, the Temple of Herod, and Hadrian's Temple of Jupiter (A.D. 70). Here Abd-el-Melik erected the shrine of Islam, which became only second to Mecca in sanctity. Tradition has it that from this rock Mahomet ascended to heaven, and the building, probably intended to enshrine this sacred spot, was certainly not a mosque and was not built by Omar. It is octagonal with three concentric parts ; the outer aisle has columns, probably from the Temple of Jupiter, with Byzantine capitals brought to a uniform height by " dosseret " blocks, supporting horizontal beams and circular arches ; the inner aisle is formed by columns which support the central dome, which covers the holy rock in the centre with its many legends. The whole building was sheathed externally with brilliant Persian tiles and internally with marble slabs by Suleiman the Magnificent in A.D. 1561.

The **Great Mosque, Damascus,** stands on the site of a Roman temple converted (A.D. 379) into a church by Theodosius, and rebuilt (A.D. 705)

as a mosque by the Mahometans. Entered from the bazaar, through the old Roman gateway, it measures about 420 ft. by 120 ft., and has three aisles of equal width, crossed in the centre of its length by a broad, high transept crowned by a central dome. To the north is the great court, with lofty arcades and the graceful minaret of the Khalif-el-Walid, to which two others were afterwards added. Several times damaged by fire, the last conflagration in A.D. 1893 did irreparable damage, and at the time of the author's visit in A.D. 1913 much of the old mosque had evidently suffered both destruction and restoration.

(*c*) EGYPTIAN SARACENIC

The **Mosque of Amr, Cairo** (A.D. 642), was erected by the two great building Caliphs, Abd-el-Melik and Walid, who utilised columns from Roman and Byzantine buildings to support characteristic Moslem arches. The open court, about 250 ft. square with central fountain for ablutions, has a single arcade on the entrance front and triple arcades on either side ; while on the side of the Mecca or mihrab wall the arcades are six in depth, stretching across the whole width, and all are at right angles to the mihrab wall, giving dignity and importance to the prayer space.

The **Mosque of Ibn Tooloon, Cairo** (A.D. 879) (p. 834 A, B), is of vast proportions and, although on similar lines to the Mosque of Amr, it marks an advance in the Saracenic style, and does not betray Roman or Byzantine influence as no columns are used. Their place is taken by built piers and angle shafts to support the pointed Saracenic arches, and all the arcades are parallel to, and not at right angles to, the Mecca wall. The whole construction is of brick faced with plaster, covered with Kufic inscriptions, enlivened with colour. The windows are entirely filled with intricate geometrical tracery, and the graceful minarets are reckoned the earliest in Egypt.

The **Mosque of Kalaoon, Cairo** (A.D. 1287), with its beautiful " founders' tomb " and lofty portal of black and white marble, is one of a series commenced at the end of the thirteenth century, a period marked in Europe by the great Gothic development.

The **Mosque of Sultan Hassan, Cairo** (A.D. 1356) (p. 834 C, D), differs from the normal type in being cruciform in plan and without columns or arcades. The central space measures 117 ft. by 105 ft., off which are four rectangular arms covered with pointed barrel vaults which had been introduced into Egypt at the time of the foundation of Cairo in A.D. 971. The southern arm contains the mihrab and beyond is the founder's tomb, about 70 ft. square, with a dome supported on stalactite pendentives. On either side are minarets, one being 300 ft. in height. The mosque is surrounded by walls, divided into nine storeys and crowned by a massive cornice, 100 ft. above the ground, giving the appearance of a fortress rather than of a mosque.

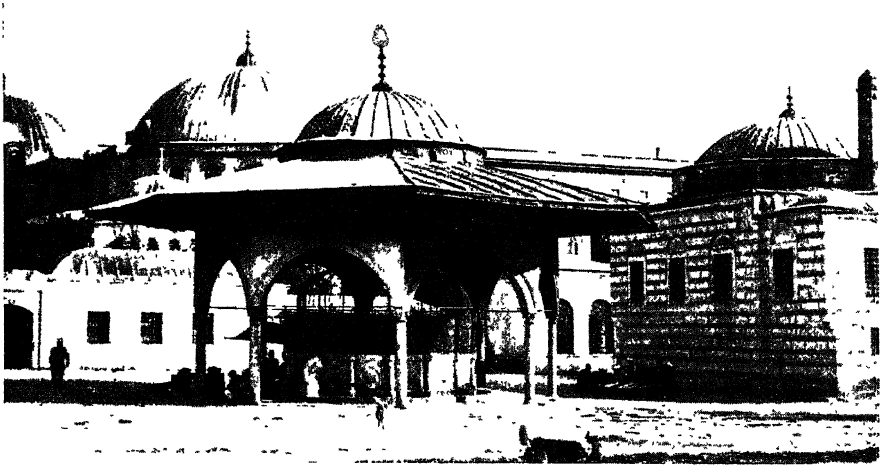
The **Mosque of Sultan Berkook, Cairo** (A.D. 1384) (p. 858), among the Tombs of the Caliphs, is famous for graceful domes over tomb chambers and for its minarets. The columned **Mosque El-Muayyâd** (A.D. 1415) and the small but richly finished **Mosque of Kait-bey** (A.D. 1472) (p. 833 A, B), with elaborate minaret and internal fittings, ended the great Saracenic building age in Egypt, for the invading influence of the European Renaissance movement arrested its development (p. 832).



THE GIRALDA, SEVILLE

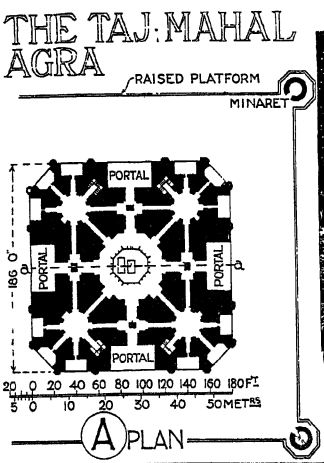


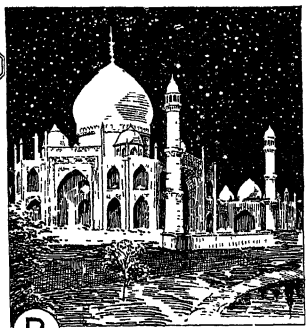
A. The "Suleimaniyeh," Constantinople

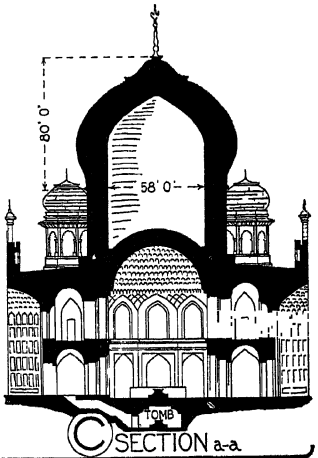


B. Fountain in Court of S. Sophia, Constantinople

THE TAJ: MAHAL AGRA

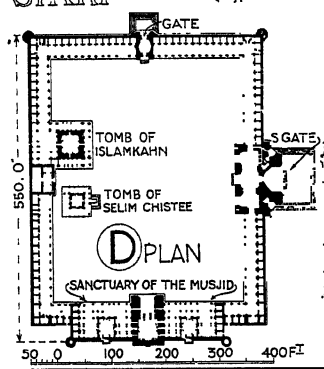


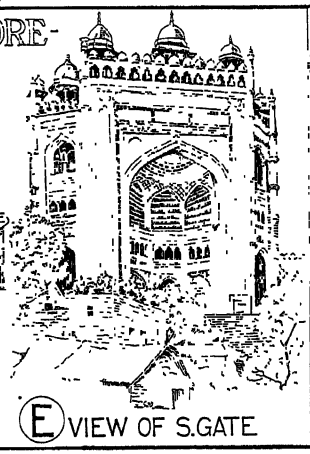




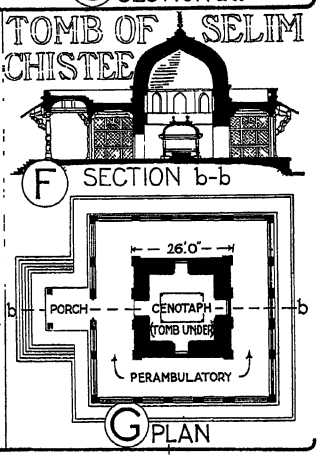
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MOSQUE: FUTTEHPORE-SIKRI

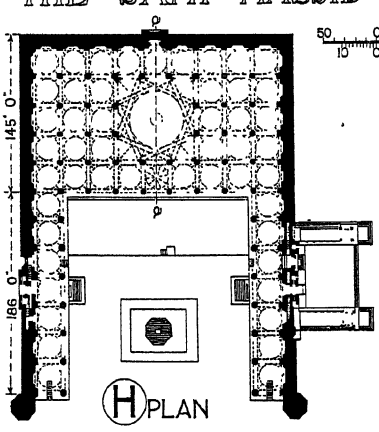




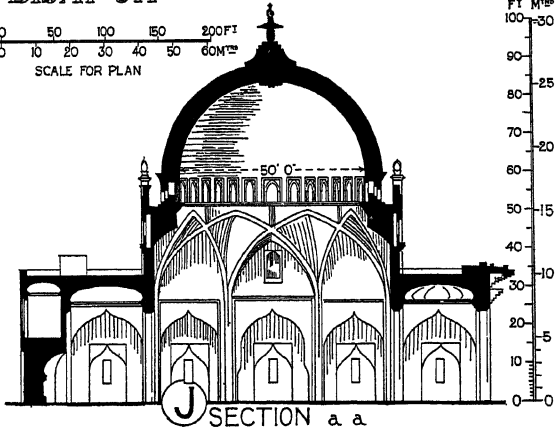
TOMB OF SELIM CHISTEE

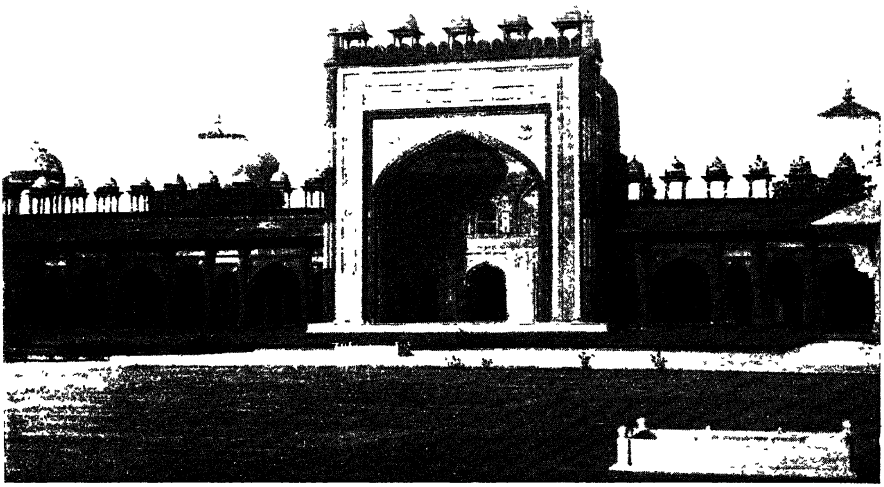


THE JAMI-MASJID: BIJAPUR

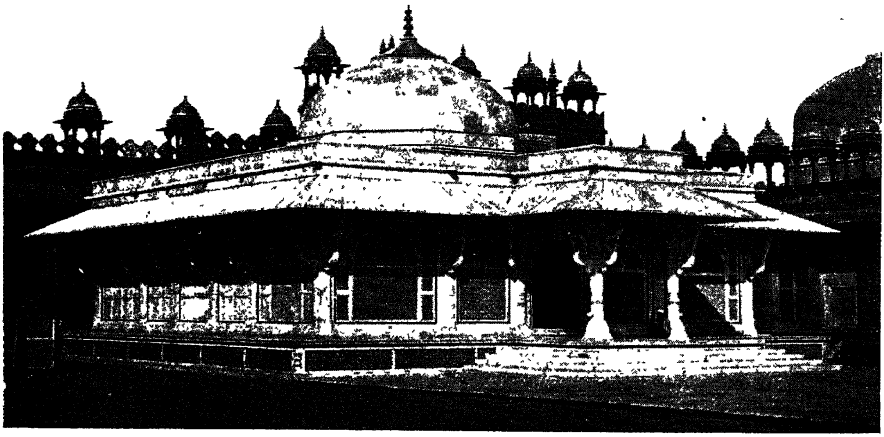


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A. Mosque of Futtehpore-Sikri : Western Side of Court



B. Tomb of Selim Chistee, Futtehpore-Sikri

(*d*) SPANISH SARACENIC

After the Moorish conquest of Spain in the eighth century and the establishment of the Western Caliphate at Cordova, many mosques were erected in the Peninsula, with the usual open court and rectangular prayer chamber of numerous arcades whose general features were largely determined by the use of Roman columns, capitals, and decorative carving found on the spot. These mosques were devoid of the dome, which in the East usually indicated the presence of a tomb chamber, but they displayed the same elaboration of geometrical design with bright colours in decoration which characterise the Saracenic or Mahometan style in all countries.

The **Great Mosque, Cordova** (A.D. 786) (p. 833 c), the glory alike of the Western Caliphate and of its founder, the Caliph Abd-el-Rahman, was the centre of Islam in the West. It was enlarged southwards and eastwards by successive rulers, until now it consists of a rectangle, 425 ft. by 570 ft., second only to the Kaabah at Mecca in size. The enclosed portion alone occupies a larger area than any Christian cathedral, consisting of nineteen aisles running north and south, with thirty-three bays to each aisle, supported on a labyrinth of 1,200 many-coloured columns, and approached from the open court by nineteen bronze doors. The colonnades are in two heights formed of columns of varying design, some from Roman and Byzantine buildings. Some of the upper and lower columns support arches, the lower of circular cinquefoil pattern and the upper of horseshoe form ; while alternate lower columns are made to appear connected by a subsidiary treatment of the lower arches (p. 833 c). This vast mosque, which since A.D. 1238 has been a Christian church, is only 30 ft. in height, and is remarkable for circular instead of pointed arches, due to the influence of Roman remains in Spain. The magnificent interior is ablaze with the jasper, porphyry, and coloured marbles of its columns, sometimes supporting three superimposed tiers of Saracenic arches, all lighted by innumerable hanging lamps, while artificers from Constantinople spread the floor with glowing mosaics and wrought a wonder of brilliant glass and gold into the mihrab roof.

S. Cristo de la Luz, Toledo, erected anterior to the eleventh century as a mosque and given to the Templars in A.D. 1186, and **S. Maria la Bianca, Toledo,** erected in the twelfth century as a synagogue, but in A.D. 1405 converted into a Christian church, are interesting for their Saracenic features and detail.

The **Alcazar** (*el kasr* = the castle), **Seville,** dating chiefly from A.D. 1350–69, is much dilapidated, but still possesses some interesting remains, such as the principal façade and " Patio de las Doncellas " surrounded by the Hall of the Ambassadors and other apartments.

The **Giralda, Seville** (A.D. 1159) (pp. 839, 531), so called from its turning figure or weather vane, is one of the most celebrated and beautiful towers in the world. It resembles others in Morocco and Tunis, and was probably erected as a symbol of power. It is 45 ft. square throughout its height of 185 ft., and is terminated by a belfry added in A.D. 1568 in the Renaissance style, surmounted by a revolving figure of Faith, which brings the total height to 275 ft. This upper addition is unworthy of the beauty of the Moorish tower below, which, from the scale of its proportions, the delicate geometric decoration of its panels, and the distribution of its graceful windows, is unrivalled, even by the Campanile at Venice (p. 506 A).

The **Alhambra, Granada** (A.D. 1309–54) (p. 834 E, F), is a portion of a royal palace and probably the most famous of all Saracenic structures. It was the gorgeous pleasure-palace, in the new Caliphate of the West, of the Caliph Abd-el-Walid, who built mosques at Jerusalem and Damascus, and who intended it to impress the imagination of the conquered country, as well as to minister to his enjoyment of the passing hour. Here a surfeit of surface decoration, easily carried out in plaster and colour, takes the place of a more monumental treatment, and suited the fatalist nature of people who were content to build for the present rather than for all time. The plan consists mainly of two oblong courts at right angles to each other (p. 834 E). The "Court of the Lions," 115 ft. by 66 ft., is the more elaborate; the columns are alternately single and coupled, with stalactite capitals, which support arcading of wood, covered with richly stuccoed decoration (p. 833 D). A copy of this court, two-thirds the size, was erected (A.D. 1854) at the Crystal Palace by the late Mr. Owen Jones. The "Hall of Judgment" (p. 834 F) is at its eastern end, and on either side are the small halls of the "Two Sisters" and of the "Abencerrages," with roofs formed of stalactite vaults. The "Court of the Alberca" is 138 ft. by 74 ft. with its longer axis north and south. On the south is a two-storeyed arcade, and to the north, in the massive Tower of Comares, is the "Hall of the Ambassadors," 35 ft. square, crowned by a polygonal dome with arabesque decorations, and on three sides deeply recessed windows give views of the town beneath. The Alhambra is a series of courts, halls, and apartments with richly modelled geometric plaster decoration, brilliantly painted and gilded, all framed in a setting of arcades, fountains, and gardens, whose subtle effect it is difficult to analyse.

(*e*) PERSIAN SARACENIC

Saracenic architecture in Persia was largely founded on that of the Sassanian dynasty (A.D. 226–642) (p. 58), whose buildings were chiefly palaces which, in their turn, indicate the influence of the older Assyrian and Persian architecture (pp. 51, 57).

Bagdad, as the capital of the Eastern Caliphate under the Abbasides dynasty, became the most important city in the East, but nothing now remains of all the splendid buildings, glowing with rich Eastern colour, which must have beautified this marvel-city on the Tigris in the proud days of Haroun-al-Raschid (A.D. 786–809) and over which has been thrown the glamour of the stories in the "Arabian Nights." Only two neglected tombs still stand without the city walls as witnesses of the splendours of ancient days.

The **Tomb of Zobeide, Bagdad,** erected for the favourite wife of Haroun-al-Raschid, is an octagonal structure, surmounted by an unusual pyramidal roof in which Saracenic builders developed a cunning device in the use of alternating arches, carrying internally those overhanging pointed niches which were possibly the origin of stalactite vaulting, which became such a prominent feature in Saracenic decoration (p. 856).

The **Tomb of Ezekiel** (so-called), **near Bagdad,** has a somewhat similar pyramidal roof, broken by a cavetto cornice.

The **Mosque, Tabreez** (A.D. 1204), with its domed tomb chamber, built by Ghazan Khan, was a new departure in mosques; for it followed the Byzantine plan and has a central dome of Sassanian type in addition to that over the Caliph's tomb; while the stately entrance portal is dignified by a lofty

semi-dome, which invests it with a grandeur hitherto unknown in mosque building. The great glory of this mosque lies, not in its plan, its domes, or its portals, but in that wonderful decoration of glowing Persian tiles with which it is clothed, both within and without. In all the range of coloured architecture there is nothing comparable to this old mosque for the brilliancy and completeness of its colour scheme.

The **Tomb, Sultanieh** (A.D. 1303–16), is octagonal with the small tomb chamber in the rear. It is crowned externally by an arcade of pointed arches, encircling a graceful egg-shaped dome, 80 ft. in diameter, and the beauty of the coloured tiles with which it was faced rivalled those at Tabreez.

The **Great Mosque, Ispahan** (A.D. 1585), erected by Shah Abbas the Great, is somewhat similar to the Mosque of Sultan Hassan, Cairo. The entrance portal, approached at an angle from the Bazaar, leads into a large open court, 225 ft. by 175 ft., with a fountain for ablutions, beyond which is the prayer chamber with the Mecca wall opposite. The open court is surrounded by arcades with semi-domed recesses in the centre of each side, which have domed compartments beyond, while on either side of the prayer chamber are two further courts with fountains. The arcaded " maidan " and mosque, with its immense pointed arches, lofty bulbous dome, and flanking minarets, make up an imposing group, homogeneous in design and enhanced in beauty by the wealth of glowing Persian tiles in which the iridescent blues and greens recall the ancient glory of Assyrian and Persian palaces at Nineveh and Persepolis.

(*f*) TURKISH SARACENIC

When the Seljûk Turks captured Constantinople from the Christians in A.D. 1453, they forthwith based their architecture on the local Byzantine churches, with spherical domes on pendentives and apses crowned with semi-domes, such as those in S. Sophia ; while many of the churches themselves were appropriated to Moslem worship. There is a consequent absence of columned courts with flat ceilings, which was the typical treatment in other countries. S. Sophia, after being converted to Moslem use, became the model for all Turkish mosques, which were thus unlike those of Egypt, Syria, Persia, Spain, or India; while in Turkey alone is found the curious extinguisher-roofed minaret.

The **" Suleimaniyeh," Constantinople** (A.D. 1550–56), or Mosque of Suleiman I " The Magnificent," was designed by the architect Sinan (p. 840 A). The forecourt, nearly 200 ft. in width, is surrounded on all sides by cloisters roofed with a succession of small domes ; in the centre is the usual fountain, and at the four corners are minarets. The main structure resembles S. Sophia, but is of smaller dimensions, the dome having a diameter of 86 ft. with a height of 156 ft. The gallery over the aisles is reached by two circular stairways. The walls are lined internally with coloured marbles, while the " mihrab " is white, framed in coloured Persian tiles, and the general decoration is carried out with inscriptions from the Koran. In the garden of the mosque are octagonal tombs of the founder and his favourite wife : that of the former is built of many-coloured marbles, faced internally with blue and white tiles, and is surrounded by an arcade and crowned with a dome supported on eight marble columns and decorated with arabesques.

The **" Ahmediyeh," Constantinople** (A.D. 1608–14), or Mosque of Ahmed I, differs in being an exact square on plan, with central dome on massive circular pillars surrounded by semi-domes, while in the four angles,

bringing the plan to a square, are smaller domes. The interior, owing to the large windows of white glass and to a liberal use of whitewash, though relieved by blue tiles, lacks that sense of mystery which generally pervades mosque interiors. The exterior groups up in an imposing pile, with its central and smaller domes, guarded by the unusual number of six graceful minarets at the corners of the mosque and forecourt.

Domestic architecture in Turkey is transient rather than enduring in nature; for it is largely of wood, and is subject to constant outbreaks of fire. Houses are on the plan necessitated by Moslem social customs, and are provided with cool, secluded, and arcaded courts, flat parapeted roofs and overhanging street windows, screened with pierced woodwork, while large doorways are the most important features of the façades on the street level.

Fountains are everywhere in Constantinople and other cities, whether as central features in the courts of the mosques, or set in arcades or street walls (p. 840 B). The great fountains which form cool and pleasant spots in the hot and dusty cities consist of a central block containing the water basin, while water issues from niches on each side. A wide-eaved wooden roof, sometimes upheld by columns and arches, covers the main structure, which is made beautiful by surface decoration of chastely carved marble or gleaming coloured tiles, often with inscriptions in gold on a ground of blue and green.

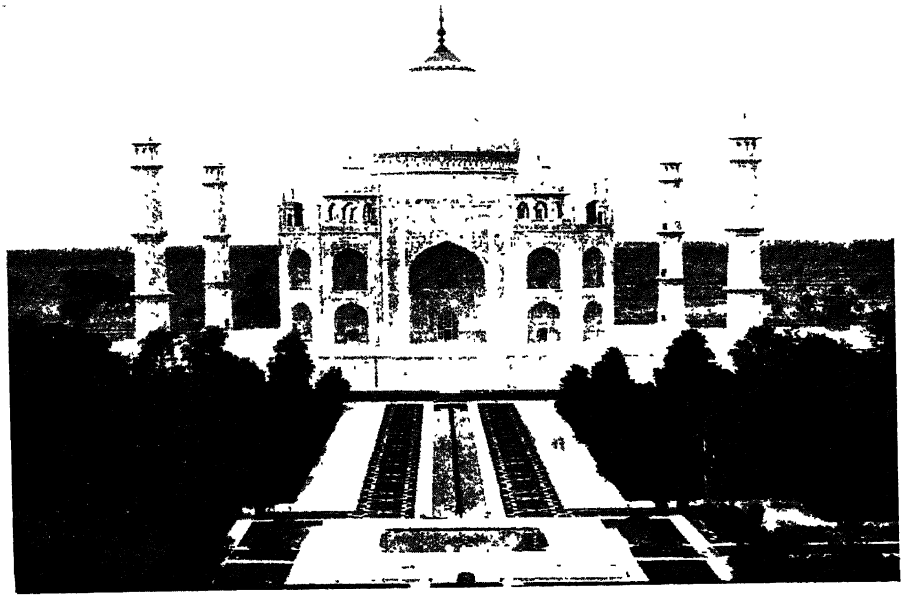
(*g*) INDIAN SARACENIC

Saracenic architecture passed into India from Persia, where it had been influenced by the architecture of the old Sassanian Empire (A.D. 226–642) (p. 58). The Pathan Dynasty (A.D. 1193–1554), with the various independent kingdoms which arose from time to time (p. 835), and the Mogul Dynasty (A.D. 1526–1857) include the two main periods of Indian Saracenic architecture, covering the whole time since the Mahometan conquest of Delhi in A.D. 1193.

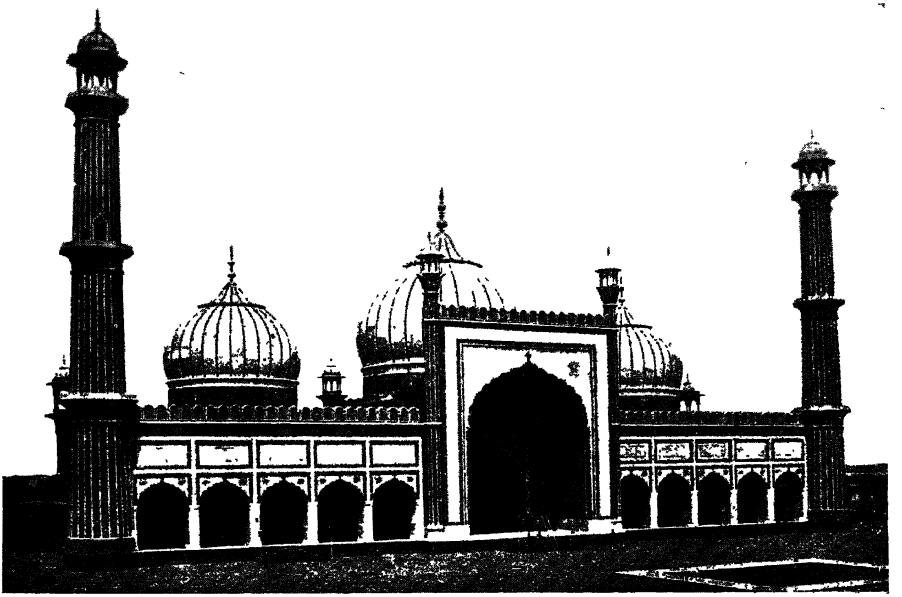
The Pathan Dynasty (A.D. 1193–1554)

Saracenic buildings in India are rendered more monumental in style, and show more genius in solving constructive problems than those of other countries, owing to the use of sandstone and marble. The Mahometan conquerors adapted existing Jaina temples, with their colonnaded courts, to Moslem use by the removal of the central Jaina shrine and by the addition of the Mecca wall for the " mihrab " ; while grandeur of scale was sometimes given to the scheme by a great screen of pointed arches, enriched with the elaborate decoration in which Hindu craftsmen excelled. It is only possible here to describe a few outstanding examples of the multitudinous buildings of various types found throughout Mahometan India.

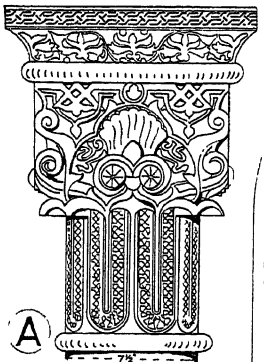
The **Kutub Mosque, Delhi** (A.D. 1193), was one of the most celebrated buildings in the capital of the Pathan Dynasty, which became the capital of the Indian Mahometan Empire, and was perhaps comparable in architectural importance with Athens, Rome, and Constantinople. This mosque, with the " minar " and several noble tombs, standing on the hillside, forms a wonderful group with the ruins of the old Pathan fort. The widespread but scanty ruins indicate a series of extensions from the original plan. The inner court of the mosque, 142 ft. by 108 ft., has the unique



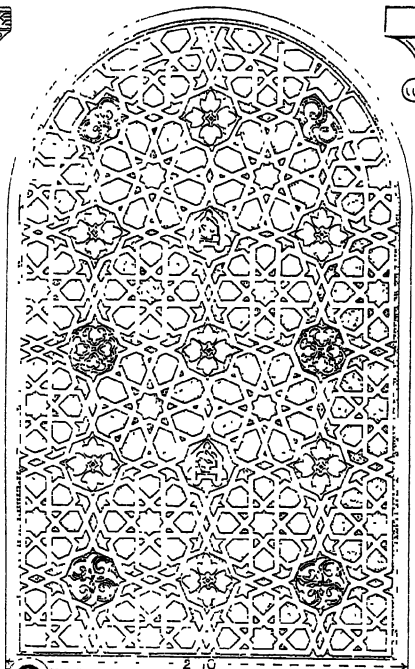
A. The Tâj Mahal, Agra



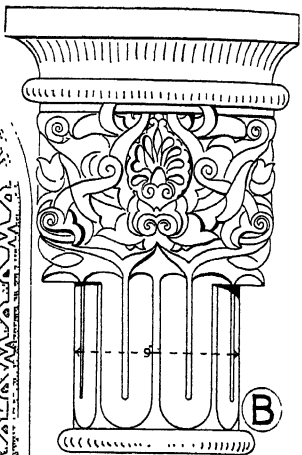
B. The Jâmi Masjid, Delhi



A
CAPITAL: ALHAMBRA



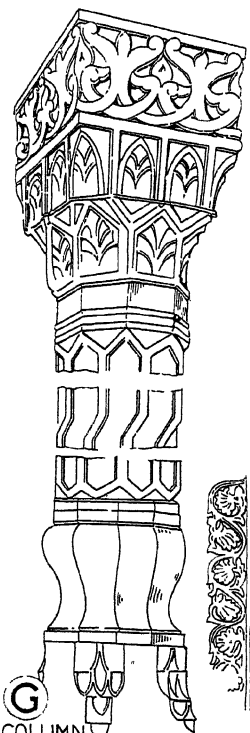
C BLIND WINDOW · ALHAMBRA



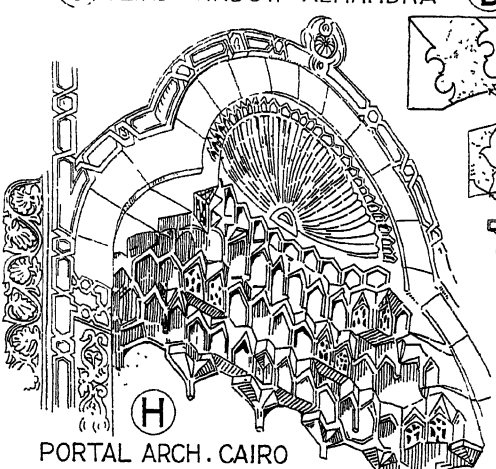
B
CAPITAL: ALHAMBRA



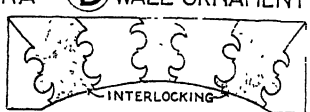
D WALL ORNAMENT

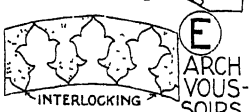


G
COLUMN
MOSQUE OF SULTAN HASSAN

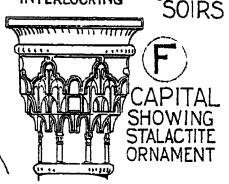


H
PORTAL ARCH. CAIRO

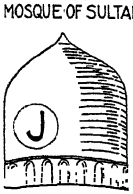




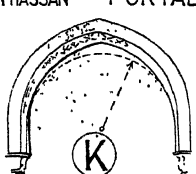
E
ARCH VOUSSOIRS



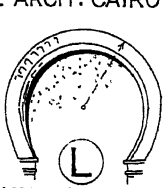
F
CAPITAL SHOWING STALACTITE ORNAMENT



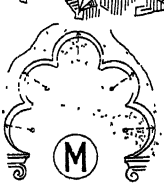
J
TYPICAL DOME



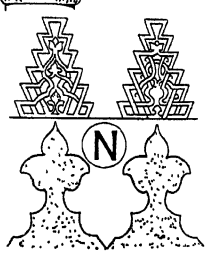
K
POINTED ARCH



L
HORSESHOE ARCH



M
MULTIFOIL ARCH



N
CRESTING TO WALLS

" Iron Pillar " in the middle. On the east the domed entrance is in the centre of a corridor of four rows of columns enclosed by a wall and with a pavilion at either end. The north and south sides had three rows of pillars with central entrances, and at the west is the screen wall with arches opening into the mosque itself, which is now in ruins. In the great enclosing court, of which some colonnades remain, stands the famous " Kutub Minar," 240 ft. high, which outrivals all others, and is conspicuous for its tapering design and delicacy of ornamental detail. This greatest of all Indian " minars " (of which there is a model in the Indian Museum, South Kensington), beautiful in the glow of red sandstone and white marble and encircled with Arabic inscriptions, may be said to bear the same relation to Indian Saracenic as does Giotto's Campanile to Italian Gothic (p. 507).

The **Tomb of Sher Shah, Sahsarâm** (A.D. 1539), one of many Pathan tombs, rises from the middle of a sheet of water on a platform with four angle pavilions. The building is octagonal on plan and a deep gallery is thrown around the central tomb chamber, which is crowned by a great dome 71 ft. in diameter, while there are smaller domes over octagonal kiosks at the angles of the two receding stages.

The **Jâmi Masjid, Jaunpur** (A.D. 1438), is raised on a platform 20 ft. above the ground. The mosque proper forms one side of a court with double and two-storeyed colonnades, and is entered through a massive pyramidal gateway, 86 ft. high, which serves as a " minar ". The central space is covered by a dome 40 ft. in diameter, and on either side are two storeyed compartments, again flanked by two others, roofed with pointed ribbed vaults showing externally. One great gateway is still indicative of the imposing dimensions of the mosque precincts.

The **Atala Masjid, Jaunpur** (A.D. 1408), has five-aisled colonnades round the outer court, of which the inner and outer rows are of double columns with bracket capitals supporting a roof of flat slabs on the Hindu plan, which, with the great arched gateways, show the usual mingling of Hindu and Saracenic styles ; while the interior domes and roofs, with their pointed keel arches, are unusually beautiful in design and decoration.

The **Jâmi Masjid, Ahmadâbâd** (A.D. 1411), shows the influence of Hindu trabeated architecture, in conjunction with the pointed arch, the symbol of Islam. This very beautiful mosque, approached through a court flanked by colonnades, has 15 domes grouped in different heights with 260 supporting columns.

The **Jâmi Masjid, Champanir** (A.D. 1500), is another remarkable building with large court and many-domed sanctuary.

The **Jâmi Masjid, Mandu** (A.D. 1405–32), occupying a space of 290 ft. by 275 ft., has a square courtyard enclosed on each side by arcades of eleven pointed arches supported on red sandstone piers, while numberless pointed domes crown the spaces above.

The **Adinah Mosque, Gaur** (A.D. 1358), the ancient capital of Bengal, has arcades surrounding the court crowned by 385 domes, producing a somewhat monotonous effect, only broken at one point by the superimposed columns of the royal gallery. The architecture of this province is influenced by the absence of stone, and as brick is the building material, an essentially arcuated style is the result.

The **Mosque, Kulbarga,** erected in the fourteenth century, is a deviation from the normal type, as it lacks the usual open court, and the whole area of about 100 ft. square is covered by a series of 75 small domes, with larger

domes in front of the mihrab and at the four angles, light being introduced through pointed arched openings in three of the outer walls, thus resembling the Mosque, Cordova (p. 843).

The **Jâmi Masjid, Bijapur** (A.D. 1557–79) (p. 841 H, J), is one of many buildings in the city which were erected under the Adil Shahi dynasty. It occupies a rectangle of 260 ft. by 330 ft., and consists of a series of square compartments, each covered with a flat dome formed in the thickness of the roof, while in front of the mihrab is the great dome, nearly 60 ft. in diameter, supported on interlacing pointed arches, which spring from every third pier—a remarkable instance of the constructive skill of Saracenic architects.

The "**Ibrahim Rouza,**" **Bijapur,** is a remarkable group of buildings, including mosque and tomb.

The **Tomb of Malmûd, Bijapur,** has a dome 97 ft. in diameter, placed on a platform formed by intersecting pendentive arches, by which means the space to be covered is reduced, and the weight of the pendentives acts inwards to counteract the outward thrust of the dome, as at the Jâmi Masjid, Bijapur.

The Mogul Dynasty (A.D. 1526–1857)

All previous Saracenic architecture was eclipsed by that of the Mogul Emperors who, from the time that Bâbar captured Delhi (A.D. 1526), and declared his Empire at Agra, proved themselves the rivals of Egyptian Pharaohs as monumental tomb-builders, but the tombs of the Mogul Emperors were used as festal halls during their life and formed their resting-place in death. It has been said that, while the great Moguls designed like Titans, they finished like jewellers. This unusual combination gives the special character to the architecture of these palace-tombs which, rising from a garden platform, were laid out with ornamental fountains, while the angles and entrances were accentuated by domed pavilions.

The **Mosque of Sher Shah, Delhi** (A.D. 1541), without courtyard or "minars," is beautiful in the simplicity of its design, and is a prototype of later buildings. It has but one hall, 168 ft. by 145 ft., with five entrance portals of somewhat flattened pointed arches and panelled piers, inlaid with coloured marbles; while along the roof line of the façade there runs horizontally a carved cresting, behind which the single dome, circled with twelve small windows, rises in the centre.

The **Tomb of Humâyûn Shah, Old Delhi** (A.D. 1565), standing on an arcaded platform inlaid with marble, is an octagon 47 ft. in diameter, crowned by a glistening marble dome of delicate contour, while the marble walls enhance the general purity of the design. There are great recessed arched entrances on four sides with four supplementary octagonal chambers between them for tombs of the dynasty.

The **Tomb of Mahomet-Ghaus, Gwalior** (A.D. 1562), is a typical tomb monument, 100 ft. square on plan externally, with hexagonal domed towers at each angle, and octagonal internally with pointed arches across the angles to carry the central Pathan dome. The deep surrounding gallery has a screen of exquisitely pierced stone tracery, which is the great glory of this tomb, even in the city of Gwalior, which is famous for its fine craftsmanship.

The **Palace of Akbar, Allahabad,** now a British arsenal, must have been on the grand scale, with its two-storeyed pavilion, girt about with forty pillars standing octagonally in outer and inner rows of twenty-four and sixteen

respectively; while a similar number above carried the dome. Nothing, however, remains of these palace buildings but the square audience hall with its sixty-four columns, eight rows deep, enclosed by a verandah of double columns, which, with elaborate bracket capitals, support the wide-eaved roof.

The **Mosque, Futtehpore-Sikri** (pp. 841 D, E, 842 A, 855 A, B), is one of a group of important buildings erected in this city, founded by King Akbar (A.D. 1556–1605). It is a three-domed structure, 290 ft. by 80 ft., occupying one side of an open court (p. 842 A), the whole enclosure measuring 550 ft. by 470 ft., and containing two royal tombs. The southern gateway is of a style which prevailed throughout the period, and may be contrasted with the Greek, Roman, and Gothic styles in the treatment of monumental entrances. The entrance gateway (p. 841 E) has a recessed centre, crowned with high enclosing arch and semi-dome and with an outer square frame, while the doorways leading to the mosque are of normal height and occupy the lower part of the recess. By this means the doorways give scale and lead the eye by an easy gradation to the high enclosing arch of the gateway, and thus the size and dignity required for a noble portal is obtained without disturbing the æsthetic qualities of scale. This mosque is glorious in its triple domes, its great tombs, its carved doors (p. 855 C) and marble cornices, ornate pillars and fantastic brackets (p. 855 F), but most of all in its monumental gateway, which is in itself a triumph of Saracenic genius. The marble Tomb of Selim Chistee (pp. 841 F, G, 842 B), one of the two tombs in the court, has a square cenotaph chamber crowned by a dome and lit by windows with pierced geometric tracery, while the surrounding ambulatory has over-elaborated bracket capitals and broad spreading eaves.

The **Diwan-i-Kas, Futtehpore-Sikri** (p. 855 G, K), formed the private audience hall of the great King Akbar (A.D. 1556–1605). The walls, encrusted with precious stones, support a flat roof over a space in which there is an amazing central column, with an intricately bracketed capital (p. 855 D) carrying the throne of the potentate who presided over religious discourses, and from which passages radiate to the angles of the gallery where sat his four ministers. There is a reproduction of this curious throne in the Indian Museum, South Kensington.

The **Tomb of Akbar, Sikandara** (A.D. 1593–1613), has a vaulted tomb chamber, in which rests the royal builder who reared for himself this great edifice near Agra, unique among the tombs of India. A massive gateway of red sandstone, inlaid with white marble, leads through the surrounding garden to the four-storeyed pyramidal tomb, encircled by an arcaded cloister with angle pavilions and domed entrance portal. From this terrace rises another with its pavilions and again a third and a fourth, all decreasing in size, while on the topmost terrace, surrounded by dazzling marble trellis-work, is the cenotaph of Akbar, raised high in the air above his tomb beneath.

The **Palace, Delhi,** erected by Sháh Jehán (A.D. 1628–56) in the Fort, was of great size, but only portions in the midst of British barracks now remain. It occupied a space of 1,600 ft. by 3,200 ft., and had immense portal, entrance hall, courtyards, bazaars, audience and music halls, baths and gardens, besides accommodation for distinguished guests and court attendants. The Palace would appear to have been designed on one uniform all-inclusive plan, and must have been the vastest and probably the most magnificent of all royal palaces.

The **Tâj Mahal, Agra** (A.D. 1630) (pp. 841 A, B, C, 847 A), also erected by

Sháh Jehán, is one of the most famous architectural monuments in the world. It is a royal mausoleum in white marble, placed in the centre of a platform 18 ft. high and 313 ft. square, each angle being marked by a minaret 133 ft. high. It is symmetrical in plan, being a square of 186 ft. with the angles taken off, and has a central dome 80 ft. high and 58 ft. in diameter, surmounted by an outer dome nearly 200 ft. above the platform (p. 841 c). Around the central dome are two-storeyed aisles, each angle being provided with a small dome supported on pillars. The entrance in the centre of each face is of the usual recessed type, crowned with a four-centred arch set in a square frame. The light to the interior is introduced through two pierced marble screens in the upper storey, producing a dim and subdued effect. The Tâj in all the gorgeousness of oriental splendour is a dream among tombs and a miracle in marble. Here, too, the Eastern love of colour runs riot in covering the beautiful marble-work of the architect with the inlay of the jeweller who wrought his gems—jasper, bloodstone, and agate—into scrolls, fretwork, and wreaths in the glistening surface of the marble. As a palace of pleasure it enchants alike by its perfection of symmetry, beauty of design, and delicacy of decoration. It stands by the waters of the Jumna amidst marble terraces, fountains, and lakes, and is invested with the solemnity suitable to a mausoleum by the dark sentinel cypresses which stand around.

The **Jâmi Masjid, Delhi** (A.D. 1644–58) (p. 847 B), occupies one side of a colonnaded court and was erected for Sháh Jehán. It is of red sandstone and white marble, and was designed for external effect. It is raised on a lofty basement, and the three gateways, angle pavilions, noble minarets, and triple bulbous domes combine to produce an imposing group.

The **Moti Masjid, Agra** (A.D. 1646–53), is another three-domed mosque in white marble, known also as the Pearl Mosque, similarly arranged with a court 150 ft. square.

We have seen that, after Akbar the builder, the great Mogul tradition had been continued by his grandson, Sháh Jehán, who is memorable as the author of that gem of Indian architecture, the world-famous Tâj Mahal. The example set by these Mogul Emperors was, as we should expect, followed by the nobles of their courts, who vied with one another—somewhat as did contemporary Italians in Europe—in erecting princely palaces and monumental tombs rich in Oriental splendour. We have seen, too, that Saracenic architecture had, according to its custom, adapted itself in India to the country it invaded. There it discovered types eminently suitable to its own needs ; it founded new shrines on old models and flourished amazingly, and displayed for a while the full vigour of a progressive style, until it came to maturity under Akbar, after which it rapidly degenerated into a style which was sweet rather than strong, and dainty rather than dignified. Saracenic architecture in India had indeed run its course. It paid the penalty of its own adaptability and gave way before the influx of ideas brought to India from Europe, where the Renaissance movement was at its height. But beyond this new insidious influence there was something on the spot to account for its decline ; for the power of the Great Moguls, those giant patrons of architecture, now began to be undermined ; no longer did they rule as unchallenged potentates ; no longer had they the same zeal for monumental building, and Saracenic architecture in India declined *pari passu* with the political power of the Mogul Empire, of which it was the material expression.

4. COMPARATIVE ANALYSIS

A. **Plans.**—Mosques (Arabic, *mesgid* = a place for prostration) are the principal buildings, and the essential requirements were a large enclosure, rectangular on plan, with central fountain for ablution, as enjoined by the Koran (pp. 834 A, 841 D). This court occupies a similar position to the atrium of the Christian basilican church. Around this open space were roofed arcades or colonnades for protection from the sun ; the side towards Mecca, which formed the prayer chamber or mosque proper and was the most frequented part, was generally of extra depth. In the wall towards Mecca is the " mihrab " (niche), in which the " kibleh " indicates the direction of Mecca. The " mimbar " (pulpit) stands alongside (p. 833 B), while near at hand is the " dikka," or tribune, from which the " unam " reads passages from the Koran and intones the prayers. Minarets accentuate certain portions of the plan, as, for example, the angles of the court or mosque proper. A second type is seen in the Mosque of Sultan Hassan, Cairo (p. 834 C), which is cruciform on plan, and the central portion is left open to the sky. The four arms are arched over with pointed vaults, and behind the " mihrab " is the founder's tomb crowned with a dome, a very usual arrangement. A third type was based on the Byzantine model, in which the mosque proper was an independent building, entered through a court, with a garden behind in which is the tomb of the founder.

The Khans (caravanserais or inns), often erected in great cities, as Cairo and Damascus, have an open court, round which are numerous chambers in two storeys used by merchants or travellers who came from all parts to dispose of their goods. In Constantinople there are 180 of these buildings.

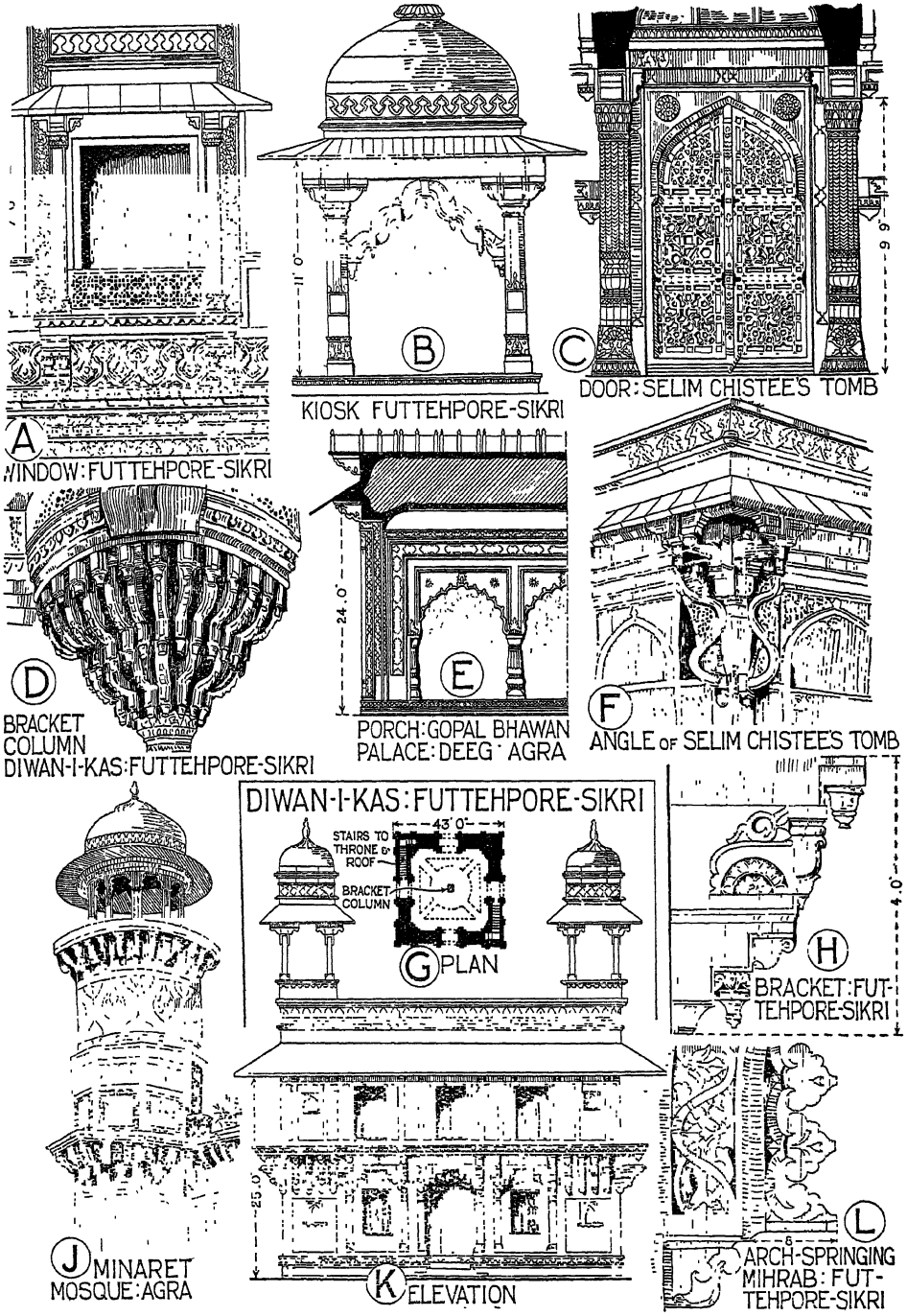
Dwelling-houses are planned in the Eastern manner, with internal courts on which face the principal rooms. There is generally a main court, approached from the entrance, in which is a summer-house and fountain. The windows towards the street are small and strongly barred in the lower storeys ; while those to the upper storeys often overhang and are protected with wooden lattices (p. 848 C). Special regard is paid to seclusion in the planning of corridors for the isolation of the harem or women's apartments.

B. **Walls.**—Walls were constructed of local materials and covered with minute surface decoration in plaster, precious stones, and glazed tiles (p. 857). The Alhambra, Granada, has walls sheathed with glazed tiles to a height of 4 ft., above which there is a scheme of arabesques in plaster. In Cairo the ground-floor walls are frequently of stone, while those of the upper storeys are of wood or brick faced with plaster. External walls facing the street have few openings, so as to ensure the seclusion of the women. The horizontal banding of walls in alternate courses of stone and brick, or of stone of different colours, gives special character to external walls (pp. 833 A, 858). Minarets, from which the Moslems are called to prayer, are usually at the angles of mosques and tombs, but in Gujerat they are generally placed on the façades. They are usually square on plan, changing in the upper stages to polygonal and circular, each marked by projecting balconies with pierced balustrading, and supported on corbelled or stalactite brackets, as seen in the Mosque of Kait-Bey (p. 833 A) and at Agra (p. 855 J). The minaret gives a special character to these Saracenic mosques ; some have only one, but others have two (p. 858), four, or even six, which make a very effective skyline both for the flat-roofed and the domed variety of mosque

(pp. 840, 847). Various forms of bold cresting often crown the walls and take the place of a cornice (pp. 833 A, 834 B, 842 A, 848 N). In Mogul architecture walls were divided into panels for inlay by perpendicular and horizontal enclosing lines (p. 842 A).

C. **Openings.**—Arcades were in great demand, not only on account of the southern climate, but as enclosures for the mosque courts, and also to satisfy the Saracenic requirements of numbers of arches, as symbolic of their faith. Four types of arches were employed: (*a*) The pointed arch, square in section and not moulded (p. 848 K). (*b*) The ogee or keel arch, used in Persia and India (pp. 848 J, 859). (*c*) The horseshoe arch, used in Spain and North Africa (pp. 833 C, 848 L, 859). (*d*) The multifoil or scalloped arch, an especially Spanish feature (pp. 833 C, 848 M, 855 E, 859). In arcades the arches rest on columns (pp. 833 C, 840 B) or piers (pp. 842 A, 847 B), and are frequently tied in at their springing by wooden beams or iron rods. The different forms of arches used in arcades are also found in door and window openings. Doors often had intricate surface ornament (p. 855 C), and were surrounded with elaborate carved work finished with stalactite heads (p. 848 H), and the arches sometimes had voussoirs of interlocking pattern, as in the Mosque of Kait-Bey, Cairo (pp. 833 B, 848 E). Monumental entrances, which were salient features in the Saracenic architecture of India, were achieved by combining a semicircular apse on plan for the actual doorways with a lofty four-centred arch of Tudor type, which enclosed an ornate semi-dome, all set in a massive rectangular frame of panelled piers, with decorated spandrels and crested summit (pp. 842 A, 847 A). Windows were usually small, to suit the southern climate in which Saracenic architecture is found (pp. 855 A, 858). They were often grouped together, and occasionally had their entire surface filled with elaborate tracery of marble and plaster in geometric patterns, while the small open spaces were filled with coloured glass (pp. 842 B, 848 C), and may be compared with Gothic tracery windows (p. 408). In Gujerat the lighting is often effected by clear-stories. Windows on the ground floor of houses are few and small, while the upper storey receives its character from those great overhanging, balcony-like windows, which are all enclosed in elaborate wooden lattices—known as "mushrabeyeh" work—of which there are examples in the Indian Museum, South Kensington.

D. **Roofs.**—Apart from the domical treatment which, whether in dull mud, coloured plaster, or gleaming marble, is a usual roofing in the East for hut, palace, and mosque, there is also the flat roof, plastered over externally and edged with solid or pierced parapets, while the timber planks of the interior were ablaze with coloured arabesques. Domes are a special feature in the principal mosques and tombs, and are of various forms, pointed (p. 858), oval, and bulbous, but seldom spherical as in Byzantine architecture, and in Gujerat they are saucer-shaped. They are sometimes of brick in horizontal courses, plastered inside and out, or sometimes of stone (pp. 842, 847) also in horizontal courses, and with geometric patterns on the external surface, as in the Mosque of Kait-Bey (p. 833 A), which thus differs from Byzantine and Renaissance treatment. Windows sometimes occur round the base of the dome, which is, in the lower part (p. 840 A), occasionally ornamented with a fringe of sculpture (p. 847 A). Domes were nearly always placed over square compartments, as in the Byzantine style, and the Saracenic architect had to face the same difficulty of joining the square below to the circle above, which he sometimes overcame by a series of small


A
WINDOW: FUTTEHPORE-SIKRI
B
11' 0"
KIOSK FUTTEHPORE-SIKRI
C
9' 6"
DOOR: SELIM CHISTEE'S TOMB
D
BRACKET
COLUMN
DIWAN-I-KAS: FUTTEHPORE-SIKRI
E
24' 0"
PORCH: GOPAL BHAWAN
PALACE: DEEG AGRA
F
ANGLE OF SELIM CHISTEE'S TOMB
DIWAN-I-KAS: FUTTEHPORE-SIKRI
STAIRS TO THRONE & ROOF
43' 0"
BRACKET COLUMN
G PLAN
H
4' 0"
BRACKET: FUTTEHPORE-SIKRI
J MINARET
MOSQUE: AGRA
K
25' 0"
ELEVATION
L
ARCH-SPRINGING
MIHRAB: FUTTEHPORE-SIKRI

pointed niches, in rows one above the other. Each row projected in front of the one below, and thus by easy gradations the square was brought to the circular ring of the dome (pp. 834 D, 848 H). This is known as "stalactite" work, and forms the special Saracenic pendentive, a striking contrast with the Byzantine feature, which was always a plain curved surface (pp. 223 E, G, 544 C).

In India, where domical construction was carefully worked out, a peculiar form of angle or squinch arch was adopted, and stalactite pendentives appear to have been uncommon, their place being taken by interlacing arching and corbelling in horizontal courses (p. 841 J). Sometimes flat roofs of corbelled stone slabs were adapted by Saracenic architects in India, following the method which obtained in Jaina temples, while even pointed ribbed vaulting was not unknown (p. 834 F). The ceilings, as in the Alhambra, were frequently executed in richly modelled plaster, while "stalactite" ornamentation was introduced in an all-over pattern resembling in general effect the pendant vaulting of the Gothic period in Europe.

E. **Columns.**—Ready-made columns, from old Roman and Byzantine buildings in the locality, were often utilised for colonnades of mosques, and as they are of various designs they naturally produce an incongruous and haphazard effect, very much as in some Early Christian churches. The new columns designed by Saracenic architects were founded on old models varied with Saracenic ornament (p. 848 G). The columns in the Alhambra, Spain, are very slender, 12 diameters in height, surmounted by capitals (p. 848 A, B), with long necking and square upper portion carved with stalactite ornament (pp. 833 D, 834 F). Above this singular capital rises again a square post, like an elongated dosseret-block, carved with geometric and arabesque ornament, and against its sides abut the springings of the stilted arches carried on stalactite brackets resembling the stalactite capitals below (pp. 833 D, 848 F). In India, local Hindu influence produced a short, stunted pier quite Eastern in character, and also a variety of columns founded on Jaina models, with cubiform capitals and deep abacus-block (p. 847 B), while two-thirds of the way up the shaft start curious brackets (p. 855 H, L) or serpent-like struts which appear to support the outstanding beam of the roof (pp. 842 B, 855 B, F).

F. **Mouldings.**—Mouldings are subservient in the general design and their place is taken by elaborate surface decoration, although the stalactite ornament, used in rows one above the other, produces a moulded effect in itself, similar to a crowning Classic cornice (p. 833 A, B, D). Mouldings follow on simple Byzantine models of plain cavetto and torus, and when employed as a frame to doorways and windows often take the form known as the "billet," which was also used in Romanesque architecture (p. 415 A).

G. **Ornament** (pp. 848, 855).—Ornament in general was regulated as far as "motif" was concerned by the rules of the Koran, which prohibited the copying of natural objects. Saracenic ornament contrasts strangely in this respect with the elaborate sculpture of a Gothic façade, a Greek temple or a Roman triumphal arch. The Saracens, debarred from the use of natural forms, were led to evolve and perfect a scheme of decoration in which geometry was an important factor, so that they covered their buildings with geometric intertwining designs, treated with gorgeous colouring in red, white, blue, silver, and gold, thus producing a most brilliant fretted surface or carpet-like effect (p. 848 D). The term "arabesque" (Arabian-like) is applied generally to geometric designs whether in plaster or painted tiles,

where endless variety is obtained by joining together straight and curved lines forming geometric figures of all conceivable forms in which straight lines never form a right angle at their junction (p. 848 C). Among different types of surface ornament are :—(*a*) Mnemonic ornament, consisting of Arabic inscriptions from the Koran, worked into decorative panels and composed either of lettering in the older style, known as Kufic, or of the flowing character of later Italic lettering (p. 833 D). (*b*) Superposed ornament, made up of conventional designs in different planes, in which one scheme of design forms a background to the one over it, thus giving that intricacy of detail which is always associated with Saracenic ornament, while the whole is controlled by the face-plane of the surface in which the design is wrought (pp. 833 D, 839). (*c*) Stalactite ornament, primarily used to form the pendentives of domes (p. 834 D, F), was afterwards employed decoratively in door-heads (p. 848 H), capitals (pp. 833 D, 848 F), and on walls, as in the Mosque of Kait-Bey, Cairo (p. 833 A, B). The stalactite pendentive is comparatively rare in Spanish Saracenic. The Saracens also excel in surface decoration as applied to the accessories of architecture. The " mushrabeyehs " (Arabic, *sharâb* = a draught), or elaborate lattice-work screens, formed of numerous turned pieces of wood, are characteristic, and are used to windows, projecting bay-windows, portions of façades in town houses, and for drinking-fountains. The " mihrab," or prayer niche (p. 833 B), is the feature upon which the greatest elaboration of ornament is concentrated, especially in the use of costly marbles and mosaics, while the covering semi-dome is frequently enriched with interlocking arch voussoirs of different coloured marbles. The " mimbars " too, such as that in the Mosque of Kait-Bey (p. 833 B), are richly carved with geometrical patterns and stalactite ornament, and are also inlaid with ebony and ivory.

A general review of Saracenic ornament, which is so outstanding a feature of the architecture, reveals the greatest variety of treatment in form, colour, and material, together with the adoption and combination of features from other styles that were not expressly excluded by the regulations of the Koran. Even this limitation gave rise to new and ingenious decorative schemes, and the craftsman who added the typically Saracenic detail had an almost limitless scope in the combination and permutation of lines and curves, which crossed and recrossed and were laid one over the other, till nothing of the underlying framework was recognisable. There was a restlessness, too, in their decorative style, a striving after excess which is in contrast to the Greek spirit which recognised perfection in simplicity and was content to let a fine line tell its own tale. Thus we find everywhere intricacy instead of simplicity : there are brackets of such tortured forms as to be constructively useless and of such elaborate decoration as to be grotesque ; there are crestings of pierced and carved marble which challenge the delicacy of lace-work (p. 848 N), and surface panels are not only inlaid with the coloured marbles of the sculptor, but are also often encrusted with the precious stones of the jeweller ; while arabesque and geometric patterns of labyrinthine design flow in many colours from surface to surface (pp. 833 C, 842 A). All this is often emphasised by the peculiarly Saracenic stalactite ornament which, whatever its real origin, our fancy might conceive to be a constant repetition of the mihrab or holy niche to emphasise the sanctity of the building ; while mottoes from the Koran are scattered over the decorative scheme to remind the faithful of the claims of their religion (p. 833 D), much as sculptured figures of saints and Bible

incidents were used by Gothic artists to bring before the worshippers the ideals of Christianity.

The Saracenic galleries at the Indian Museum, South Kensington, give an excellent idea of the ornamental features and colour schemes of the style, which is distracting in complexity of decoration rather than reposeful in simplicity of construction.

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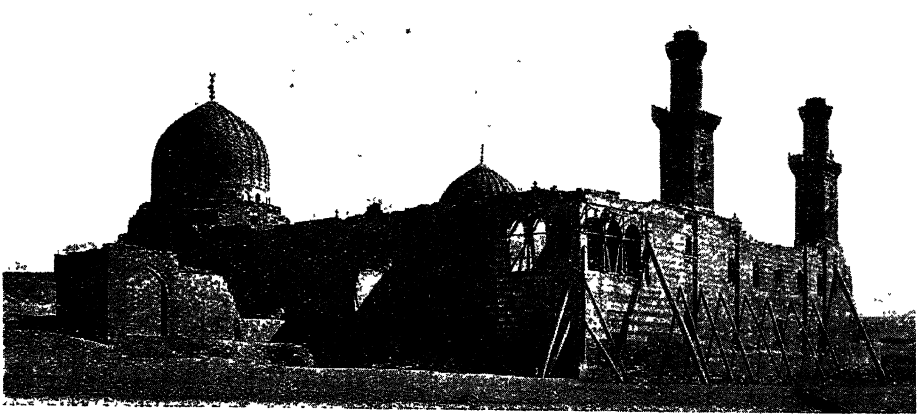
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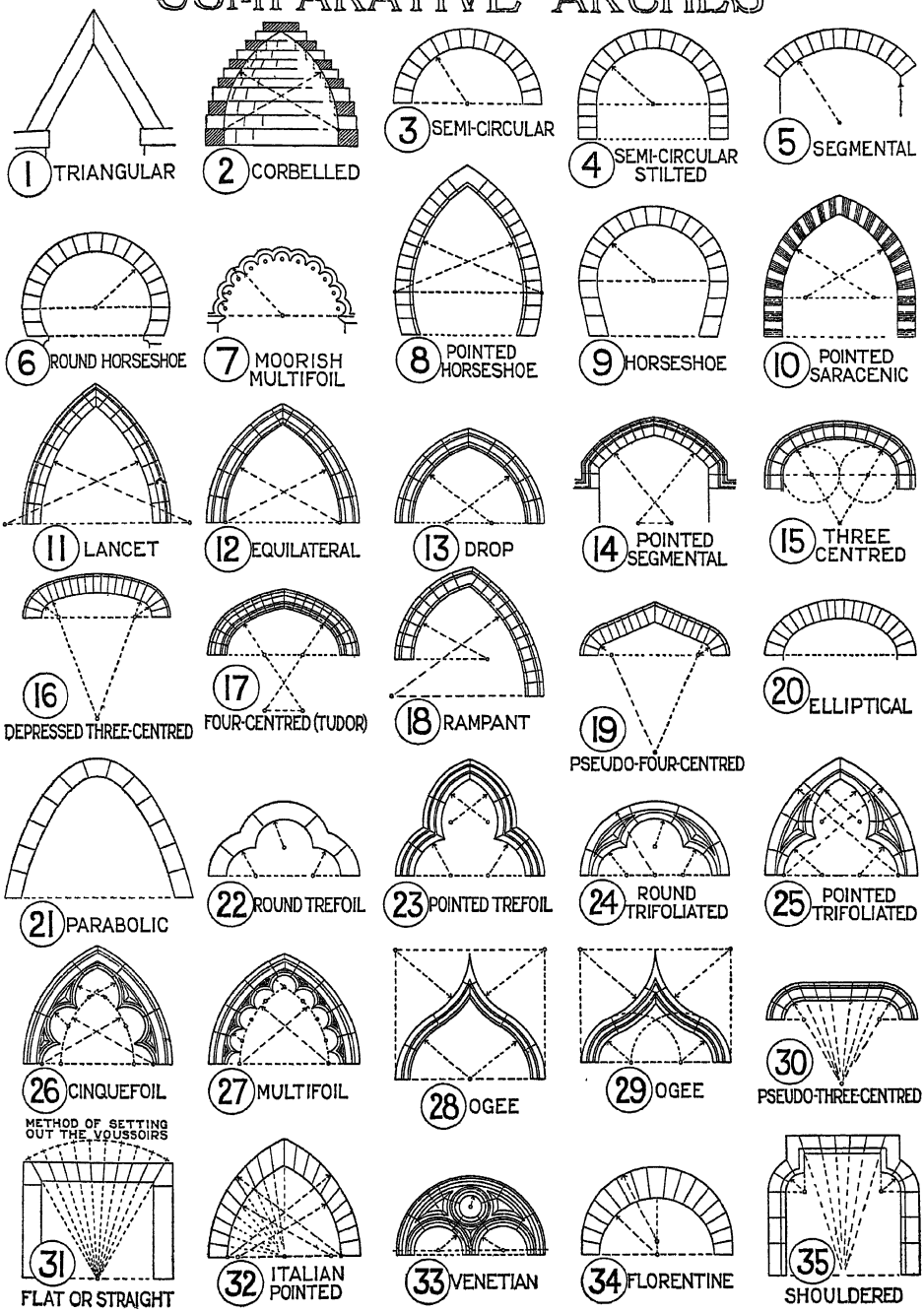
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MOSQUE OF SULTAN BERKOOK, CAIRO

COMPARATIVE ARCHES



fruit, and figures as used by Renaissance artists (pp. 612 E, 671 J, 848 D).

Aræostyle (p. 80 A).—A term used when the space between two columns is 3½ diameters.

Arcade.—A range of arches supported on piers or columns, attached to or detached from the wall (pp. 165 A, 211, 323, 357, 506, 590 B).

Arch (Lat. *arcus* = an arc of a curve, an arch).—A structure of wedge-shaped blocks over an opening, so disposed as to hold together when supported only from the sides. Various forms are shown (p. 859).

Architrave (Gk., chief beam).—The beam or lowest division of the entablature, which extends from column to column (pp. 79 A, 88, 116, 757). The term is also applied to the moulded frame round a door or window (pp. 115, 217 R, 617 J, L).

Archivolt.—The mouldings on the face of an arch, and following its contour (pp. 158 A, 178 B, F, 181, 285 K).

Arris.—The sharp edge formed by the meeting of two surfaces (pp. 80 E, 116 A, 120 J).

Ashlar.—Masonry or squared stones in regular courses, in contradistinction to rubble work (pp. 568 A, 634 C, 723).

Astragal (Gk., knuckle-bone).—A small semicircular moulding, often ornamented with a bead or reel (p. 119 B). Torus is the name applied to large mouldings of similar section (p. 119 L).

Astylar.—A treatment of façade without columns (pp. 558, 561).

Atlantes.—Carved male figures serving as pillars, also called Telamones (p. 82 J).

Atrium.—In Roman architecture, the outer or entrance court surrounded by a roof, but open to the sky in the centre (p. 184 A, D, F). In large houses it had a colonnade. In Early Christian and later architecture, the open space before the entrance (pp. 198 B, K, 206 A, C).

Attic.—A term first applied in the Renaissance period to the upper storey of a building above the main cornice; also applied to rooms in a roof (pp. 178 B, F, 181, 598 A, D, 770 A).

Attic base.—A base to a Classic column, so named by Vitruvius, and formed of upper and lower torus and scotia joined by fillets, and the most usual of all column bases (pp. 104 A, 120 H, S).

Aureole (Lat. *aurum* = gold).—A quadrangular, circular, or elliptic halo or frame surrounding the figure of Christ, the Virgin, or certain saints. Also known as the Mandorla or Vesica Piscis. When a circular halo envelops only the head, it is called a Nimbus.

Baldachino.—A canopy supported by columns, generally placed over an altar or tomb, also known as a "ciborium" (pp. 205, 209 B, 211, 590 B).

Ball-flower.—The characteristic carved ornament of Decorated Gothic architecture (p. 415 P).

Baluster.—A small pillar or column supporting a handrail or coping, a series of such being called a balustrade (pp. 596 A, 597 A, B, 606 J, 700, 751, 752 D, 762 J, L, 763 B).

Baptistery.—A separate building to contain a font, for the baptismal rite (pp. 215, 257, 258, 259 C).

Baroque (Fr., bizarre, fantastic or irregular).—A term generally applied to a style of design during the late Renaissance period, which was a reaction from Classic forms as standardised by Palladio, and often characterised by over-elaboration of scrolls, curves, and carved ornament (pp. 545, 604 A, B, 665 B).

Base (Gk. *basis* = that on which one stands).—The lower portion of any structure or architectural feature.

Basement.—The lowest stage of a building; also applied to an underground storey (pp. 711 C, 736 B).

Basilica (Gk. *basileus* = a king).—A large hall for the administration of justice (p. 157).

Batter.—A term applied to a wall with an inclined face (pp. 23, 28, 31).

Battlement.—A parapet having a series of indentations or embrasures, between which are raised portions known as merlons (pp. 372 A, 390 J, 416 D, E, F, 215 C).

Bays.—Compartments into which the nave or roof of a building is divided (pp. 301, 402, 403, 721 A). The term is also used for projecting windows (pp. 372 A, 375 A, 376 B, 752 C).

Bead.—A small cylindrical moulding often carved with an ornament resembling a string of beads (pp. 119 B, 120 P, Q) (*see* Astragal).

Beak-head.—A Norman moulding enrichment like a bird's head and beak (p. 415 D).

Belfry (Old Fr. *berfrei* = a tower—not connected with "bell").—A term generally applied to the upper room in a tower in which the bells are hung, and thus often to the tower itself (pp. 206 D, 209 A, 210, 258, 265 A, 360 D, E, 475 C, 505 D, 506 A, 513 A, 723).

Bema (Gk., a raised platform).—A raised stage reserved for the clergy in Early Christian churches; it forms the germ of the transept when expanded laterally in later architecture (p. 206 C, E).

Billet.—A Norman moulding of short

cylinders or square pieces at regular intervals (p. 415 A).

Boss (Fr. *bosse* = lump or knob).—A projecting ornament at the intersection of the ribs of ceilings, whether vaulted or flat. The term is also applied to the carved ends of weather-mouldings of doors and windows. Bosses are often carved with great delicacy, with heads of angels, flowers, or foliage (pp. 303 C, 357 C, 421, 465 A, C).

Bowtell (supposed to be so called from its resemblance to an arrow shaft or bolt).—A Norman convex moulding (usually three-quarters of a circle in section) applied to an angle—a form of roll moulding (p. 414 B, C, E, G, H, K, L).

Pointed bowtell, a roll moulding in which two faces meet in a blunt arris (p. 414 H, K).

Bracket.—A projecting member to support a weight, generally formed with scrolls or volutes; when carrying the upper members of a cornice, brackets are generally termed Modillions or Consoles (*see also* Ancones) (pp. 147 B, C, 569 J, 605 B, 606 G, 607 C, 762 D, E).

Bracket Moulding (also called "brace" or "double ogee").—A late Gothic moulding consisting of two ogee mouldings with convex faces adjoining, resembling a printer's "brace" or bracket (p. 414 V).

Broach Spire.—An octagonal spire rising without a parapet above a tower, with pyramidal forms at the angles of tower, as in Early English churches (p. 401 A).

Buttress (Old Fr. *bouter* = to bear against).—A mass of masonry built against a wall to resist the pressure of an arch or vault. The development is noted in each style (p. 404). A flying buttress is an arch starting from a detached pier and abutting against a wall to take the thrust of the vaulting (pp. 301, 404, 438 C, 441 A, 445 E, 462 A, B).

Byzantine Architecture. — The style evolved at Constantinople (Byzantium) in the fifth century (p. 219), which is still the style of the Eastern or Greek Church.

Cable.—A Norman moulding enrichment like a twisted rope (p. 415 G).

Caisson (*see* Coffer).

Campanile (It. *campana* = bell).—An Italian name for a bell-tower, generally detached from the main building (pp. 206 D, 209 A, 210, 258, 265, 505 D, 506 A, 513 A).

Canephoræ (Gk., basket-carriers).—Sculptured female figures bearing baskets on their heads (p. 123 D).

Canopy.—A covering over a niche or a tomb (pp. 205, 209 B, 211, 268 C, 480 A, 590 B).

Capital (Lat. *caput* = head).—The crowning feature of a column or pilaster (pp. 41, 93, 105, 124, 147, 152, 410, 413, 757).

Caryatids.—Sculptured female figures used as columns or supports (pp. 92 B, 98 G, 123 J). Traditionally taken to represent the women of Caria, who sided with the Persians against the Greeks, and were made slaves.

Casement.—A wide hollow used in late Gothic (pp. 407 P, 414 W, X).

Caulicoli (Lat. *caulis* = a stalk).—The eight stalks supporting the volutes in the upper part of a Corinthian capital (pp. 105, 124 A, 147, 153 E, 193 D).

Cavetto (It., from Lat. *cavus*=hollow).—A simple concave moulding (p. 119 D).

Cenotaph (Gk., an empty tomb).—A sepulchral monument to a person buried elsewhere (p. 177 H).

Chamfer (Fr. *chanfrein* = channel, furrow).—A diagonal cutting off of an arris formed by two surfaces meeting at an angle. Hollow chamfer, the same but concave in form, like the cavetto. Sunk chamfer, with the diagonal face slightly sunk but flat.

Chancel (Lat. *cancellus* = a screen).—The space for clergy and choir, separated by a screen from the body of the church (pp. 353 D, 360 C, 396, 718 D).

Chapels. — Places for worship, in churches, in honour of particular saints. Sometimes erected as separate buildings (pp. 386, 353 D, 358, 382, 383).

Chapter House (Lat. *capitulum* = council).—The place of assembly for abbot, prior and members of a monastery for the transaction of business, and often reached from the cloisters, as at Westminster (p. 353 D). In England, it was usually polygonal on plan, with a vault resting on a central pillar, e.g. Lincoln (p. 332 F), Wells (p. 334 J), Westminster (p. 357 C). It was sometimes oblong, as at Canterbury (p. 333 B).

Chevet (Fr. *chef* = head).—A term applied to a circular or polygonal apse when surrounded by an ambulatory, off which are chapels (pp. 353 D, 445 G, 459 B, 460).

Chevron (Fr., rafter).—A zigzag ornamental moulding frequently used in Norman architecture, and so called from a pair of rafters, which give this form (pp. 408 A, 415 C).

Choir (*see* Chancel).

Ciborium (*see* Baldachino).

Cimborio.—The Spanish term for a lantern or raised structure above a roof through which light is admitted into the interior (pp. 523 B, 524 D, 537 D, F).

Cinquefoil (Fr. *cinque feuilles* = five leaves).—In tracery an arrangement of five foils or openings, terminating in cusps (p. 859) (*see* Cusp).

Illustrations are paged consecutively with the text.

Clear-story (probably from Fr. *clair* = light).—An upper stage in a building with windows above adjacent roofs; especially applied to this feature in a church (pp. 24 B, F, 87 J, 157, 161 A, 301, 543, 544, 722 F, 308).

Clepsydra (Gk., a stealing away of water).—A water-clock or instrument for measuring time by the discharge of water through a small opening (p. 106 F).

Cloisters (Lat. *claustrum* = a secluded place).—Covered passages round an open space or garth, connecting the church to the chapter house, refectory, and other parts of the monastery. They were generally, as at Westminster, south of the nave and west of the transept, probably to secure sunlight and warmth (pp. 353 D, 354 A, 459 A, 556 D).

Coffers.—Sunk panels, caissons or lacunaria formed in ceilings, vaults, and domes (pp. 79 B, 120 P, 135 J, 147 B, C, 154 B, 617 G).

Colonnade.—A range of columns (pp. 140, 144 A, 585 A, 770 A).

Column (Lat. *columna* = a post).—A vertical support, generally consisting of base, circular shaft, and spreading capital (pp. 27, 41, 56 B, D, 116, 757).

Composite.—An Order employed by the Romans, with a capital composed of the upper part of the Ionic and the lower part of the Corinthian (pp. 178 G, 181 G, 757 F, 192).

Console (*see* Bracket and Ancones).

Coping.—The capping or covering to a wall (pp. 322 A, 738 A).

Corbel (Fr. *corbel* = a raven, hence a beak-like projection).—A block of stone, often elaborately carved or moulded, projecting from a wall, supporting the beams of a roof, floor, vault, or other feature (pp. 166 A, 183 A, 212 K, M, 267 D, 421 N, P).

Corbel Table.—A plain piece of projecting wall supported by a range of corbels and forming a parapet, generally crowned by a coping (pp. 268 H, 285 C, G, 416 A, B, C).

Corinthian.—The third Order of Greek architecture (pp. 105, 116 E, F, 757 E, 107).

Cornice (Fr. *corniche*).—In Classic or Renaissance architecture, the crowning or upper portion of the entablature, also used as the term for any crowning projection (pp. 79 A, 116, 147, 193 B, 558).

Corona.—The square projection in the upper part of a cornice, having a deep vertical face, generally plain, and with its soffit or under surface recessed so as to form a "drip," which prevents water from running down the building (pp. 120 A, N, 147, 762 E).

Cortile.—The Italian name for the internal court, surrounded by an arcade, in a palace or other edifice (pp. 557 C, 561 G, 562 C, D, 567 B, D, 591 B. F).

Credence.—A small table or shelf near the altar, on which the elements were placed (p. 428 K).

Cresting (Old Fr. *creste* = crest or summit).—A light repeated ornament, incised or perforated, carried along the top of a wall or roof (pp. 47 F, G, 416 J, K, 848 N).

Crocket (Fr. *croc* = a hook).—A projecting block or spur of stone carved with foliage in Gothic architecture to decorate the raking lines formed by angles of spires and canopies (pp. 401, 407 F, 416 E, N–T, 421 F, H, 465 J, K, 519 C, H).

Cross.—The symbol of Christianity, generally placed on the summit of a gable and in other prominent positions. It is often contained in a circle, and in the fourteenth and fifteenth centuries is richly floriated and of complicated forms (pp. 211 B, 217, 421).

Crypt (Gk. *kryptos* = hidden).—A space entirely or partly under a building; in churches generally beneath the chancel and used for burial in early times (pp. 212 A, 260 A, 358 F, 586 A, 722 F).

Crypto-porticus (Lat., concealed or enclosed portico).—A colonnade or portico either concealed or partly enclosed (pp. 31 B, 33 B, 183, 770 A).

Cupola (Lat. *cupa* = cup).—A spherical roof, placed like an inverted cup over a circular, square, or multangular apartment (pp. 152 H, 154, 556, 569, 577, 590, 601, 604, 635, 723, 727, 748 A, B).

Cusp (Lat. *cuspis* = a point).—The point formed by the intersection of the foils in Gothic tracery (pp. 408, 422 F, G, M, 859).

Cyma (Lat. *cyma* = wave or billow).—A moulding with an outline of two contrary curves—either the cyma recta or cyma reversa (pp. 119 G, H, 120 Q).

Cymatium.—The crowning member of a cornice generally in the form of a cyma, so called from its contour resembling that of a wave (p. 88).

Dado.—The portion of a pedestal between its base and cornice (p. 756). A term also applied to the lower portions of walls when decorated separately (pp. 694 B, 741 C).

Daïs.—A raised platform at the end of a Mediæval hall, where the master dined apart from his retainers. The term is now applied to any raised portion of an apartment (p. 370 C).

Decastyle.—A portico of ten columns (p. 76 N).

Decorated.—The second of the three divisions of English architecture, which was prevalent during the fourteenth century (p. 325).

Illustrations are paged consecutively with the text.

Dentils (Lat. *dentes* = teeth).—Tooth-like cubes in Ionic and Corinthian cornices (pp. 93 E, F, 116 D, 119 J, 120 N, P, 147 C, D, 193 B).

Diaper.—A term probably derived from tapestry hangings of Ypres, and applied to any small pattern, such as lozenges or squares, repeated continuously over the wall surface, as in the spandrels of the nave arcades in Westminster Abbey (pp. 357 A, 416 B, 465 H).

Diastyle.—A term used when the space between two columns is 3 diameters (p. 80 A).

Dipteral (Gk. *dipteros* = double-winged).—A temple having a double range of columns on each of its sides (p. 76 H, N).

Dog-tooth.—An ornament resembling a row of teeth specially occurring in Early English buildings (p. 415 L, M).

Dome (It. *duomo* = a cathedral, from Lat. *domus* = a house).—The custom in Italy was to erect cupolas over churches, and the word "dome" has passed in English and French from the building to this form of roof (*see* Cupola).

Doric.—The first and simplest Order of Greek architecture (pp. 78, 79, 80, 81).

Dormer.—A window in a sloping roof, usually that of a sleeping-apartment, hence the name (pp. 621, 622, 629 B, C, 643 H, 736).

Dosseret.—A deep block sometimes placed above a Byzantine capital (pp. 211 B, 217 E, 231 D, 240 B, C, D, E) in order to support the wide voussoirs of the arch above. Sometimes held to be a survival of the piece of entablature similarly placed in Roman architecture (pp. 135 J, L, 157 C, F).

Dripstone.—In Gothic architecture, the projecting moulding over the heads of doorways, windows, and archways to throw off rain; also known as "hood-moulding" or, when rectangular, a "label" (pp. 403 G, J, L, 407).

Early English.—The first of the three divisions of English Gothic architecture, prevalent during the thirteenth century (p. 320).

Eaves.—The lower part of a roof projecting beyond the face of the wall (pp. 268 H, 363 A, 375 B, 381 A, B, F, 452 A).

Echinus (Gk. *echinos* = sea-urchin).—The term applied to the convex or projecting moulding, resembling the shell of a sea-urchin, which supports the abacus of the Greek Doric capital; sometimes painted with the egg and dart ornament (pp. 79 A, 80).

Entablature.—The upper part of an Order of architecture, comprising architrave, frieze, and cornice, supported by a colonnade (pp. 79, 88, 116, 757, 872).

Entasis (Gk., distension).—A swelling or curving outwards along the outline of a column shaft, designed to counteract the optical illusion which gives a shaft bounded by straight lines the appearance of curving inwards (p. 126 D).

Entresol (*see* Mezzanine).

Epinaos (*see* Posticum).

Eustyle.—A term used when the space between two columns is $2\frac{1}{4}$ diameters (p. 80 A).

Exedra (Gk., out-door seat).—In Greek buildings, a recess or alcove with raised seat where the disputations of the learned took place. The Romans applied the term to any semicircular or rectangular recess with benches, and it is also applied to an apse or niche in a church (pp. 144 C, 151 D, F, 153 B, 158 B, 161 D, 224 G, 226 B).

Extrados (Lat. *extra* = without + *dorsum* = back).—The outer curve of an arch.

Façade.—The face or elevation of a building (pp. 87 E, 174[2] A, 342, 562 A).

Fan Vault.—A system of vaulting peculiar to the Perpendicular period, in which all ribs have the same curve, and resemble the framework of a fan (pp. 324 H, 358, 337).

Fascia (Lat. *facies* = face).—A vertical face of little projection, usually found in the architrave of the entablature of an Order. The architrave of the Ionic and Corinthian Orders is divided into two or more such bands (pp. 116 D, E, F, 123 J, 147 C, D).

Feretory (Lat. *ferre* = to carry).—A shrine for relics designed to be carried in processions (p. 480).

Fillet.—A small flat band between mouldings to separate them from each other; also the uppermost member of a cornice (p. 119 A).

Finial (Lat. *finis* = end).—The upper portion of a pinnacle, bench-end, or other architectural feature (pp. 371 C, 378 D, 421, 456).

Flamboyant (Fr. *flambeau* = flame).—Tracery in which the bars of stonework form long wavy divisions like flames (p. 461 D).

Flèche (Fr., arrow).—A term applied to a slender wooden spire rising from a roof (p. 462 C, H).

Fluting.—The vertical channelling on the shaft of a column (pp. 88, 120 F, J, K, M).

Flying Buttress (*see* Buttress).

Foil (Lat. *folium* = leaf).—Each of the small arc openings in Gothic tracery separated by cusps. Trefoil, quatrefoil, cinquefoil, etc., signify the number of foils (p. 859).

Formeret.—In a Mediæval vault, the half-rib against the wall, known in England as the "wall rib" (p. 303 C).

Fresco (It. *fresco* = fresh).—The term originally applied to painting on a wall while the plaster is wet, but often used for any wall painting not in oil colours. Other processes are called " tempera " or " encaustic," etc. (pp. 137, 195).

Fret (Old Fr. *frettes* = grating).—An ornament in Classic or Renaissance architecture consisting of an assemblage of straight lines intersecting at right angles, and of various patterns (pp. 125 F, 603 G). Sometimes referred to as the Key Pattern.

Frieze (It. *fregio* = ornament).—The middle division of the Classic entablature (pp. 79 A, 85 N, 116, 125 H, 286 J, L) (*see* Zoophorus).

Gable.—The triangular portion of a wall, between the enclosing lines of a sloping roof. In Classic architecture it is called a pediment (pp. 321 E, K, M, 342 A, 371, 375 B, 376).

Galilee.—A porch used as a chapel for penitents, etc., in some Mediæval churches. The origin of the term is conjectural. Some derive it from the Latin *galeria*, a long porticus or porch. Others suppose that the verse in S. Mark xvi, 7, " He goeth before you into Galilee : there shall ye see him," suggests a meeting-place, and hence the name. There are galilees at Ely (p. 332 A), Lincoln (p. 332 F), and Durham (p. 333 E).

Gallery.—A communicating passage or wide corridor for pictures and statues (pp. 693 C, 696 F). An internal and external feature in Mediæval buildings (p. 291 A, C). An upper storey for seats in a church (pp. 210 A, C, D, E, 226 A, C, 735).

Gargoyle (Lat. *gurges* = whirlpool).—A projecting water-spout grotesquely carved to throw off water from the roof (pp. 416, 465 B).

Glyph (Gk., a groove).—A carved vertical channel (*see* Triglyph).

Glyptotheca (Gk. *glypton* = carving + *theke* = repository).—A building to contain sculpture.

Gothic.—The name generally given to the pointed style of Mediæval architecture prevalent in Western Europe from the thirteenth to the fifteenth century (p. 300).

Groin.—The curved arris formed by the intersection of vaulting surfaces (pp. 135 M, 161 A, 302 B, D, 303 A, B, D, 324 A).

Guilloche.—A circular interlaced ornament like network, frequently used to ornament the "torus" moulding (p. 119 L).

Guttæ (Lat. *gutta* = drop).—Small cones under the triglyphs and mutules of the Doric entablature (pp. 79 A, F, 85 M).

Hagioscope (Gk. *hagios* = sacred + *skopein* = to view).—An oblique opening in a Mediæval church wall to give a view of the altar, and sometimes known as a " squint " (p. 396 E).

Half-timber Building. — A structure formed of timber posts, rails, and struts, and interspaces filled with brick or other material, and sometimes plastered (pp. 375 B, 381, 388 J, K, 390, 393, 492 A, C, 699 A).

Hammer-beam Roof.—A late Gothic form of roof without a direct tie, the finest example being in Westminster Hall (pp. 363 F, H, K, L, 409 E, G, H, 361).

Hecatompedon (Gk., a hundred-foot temple) (pp. 87 G, 90).—A term applied to the Parthenon, whose naos was 100 Attic feet in length, and by some applied to the width of the façade, the length along the upper step being 100 Attic feet or rather more than 101 English feet.

Helix (Gk., a spiral or tendril).—One of the 16 spirals or small volutes (helices) under the abacus of a Corinthian capital (pp. 105, 124 A, 147 C, D, 152 B, 153 E, 193 D).

Helm Roof.—The type of roof in which four faces rest diagonally between the gables and converge at the top (pp. 291 C, 296 K, 321 E).

Hermes.—A Greek deity. A bust on a square pedestal instead of a human body, much used in Classic times along highways and to mark boundaries, and decoratively in Roman and Renaissance times (pp. 617 K, 755 F).

Hexastyle.—A portico having a row of six columns (pp. 76 J, 81 A, 92 A, 310 B).

Hieron (Gk., a holy place).—The whole of the sacred enclosure surrounding a temple, as at Epidauros, including priests' and other dwellings, theatre, and stadion (pp. xxxvi B, 97 G).

Hood Moulding (*see* Dripstone).

Hypæthral (Gk., under the sky).—A building or temple without a roof or with a central space open to the sky (pp. 23 E, H, 86 E, F, 87 E, F, K, 91 B, C, F, 106 N, 154 B).

Hypocaust (Lat. *hypocaustum* = a fire chamber).—A chamber by which heat from the furnace was distributed throughout the building (pp. 158, 159).

Hypostyle (Lat. *hypo* = under + *stylus* = pillar).—A pillared hall in which the roof rests on columns. Applied to the many-columned halls of Egyptian temples (pp. 23 E, G, 24 F, G, 27 A).

Hypotrachelion (Gk., under the neck).—The channels or grooves beneath the trachelion at the junction of capital and shaft of a column (p. 80) (*see* Trachelion).

Impost (Lat. *imponere* = to lay upon).—The member, usually formed of mouldings, on which an arch rests (pp. 161 A, 178, 181, 205 A, 407).

Illustrations are paged consecutively with the text.

Intercolumniation.—The space between the columns (pp. 80A, 756 G).

Intrados (Lat. *intra* = within + *dorsum* = back).—The inner curve or soffit of an arch.

Ionic.—The second Order of Greek architecture (pp. 93, 94, 96, 97, 98, 103, 104 A, 116, 757).

Jambs (Old Fr. *jambe* = leg).—The sides of doors and windows (pp. 115, 407). The portion outside the window-frame is called the "reveal."

Keel Moulding.—A moulding like the keel of a ship formed of two ogee curves meeting in a sharp arris (p. 414 J, K); used rounded in form in the fifteenth century. The word "keel" is also applied to the ogee form of arch (p. 859).

Keystone.—The central stone of a semicircular arch, sometimes ornamented with a sculptured figure (pp. 178 A, B, C, F, M, 181, 756, 859).

King-post.—A vertical post extending from the ridge to support the tie-beam below in the centre of its length (pp. 361, 210 A, 211 A, 259 B, 722 F).

Label (*see* Dripstone).

Lacunaria (*see* Coffer).

Lancet Arch.—A sharp pointed arch, resembling a lancet, chiefly in use during the early English Period (pp. 322, 345 D, 353 A, B, 408 B, C, 859).

Lich Gate (A.-Sax. *lic* = body).—A covered gateway to a churchyard, forming a resting-place for a coffin and a place where the first portion of the burial service is often read.

Lierne (Fr. *lien* = tie).—A short intermediate rib in Gothic vaulting which does not rise from the impost and is not a ridge rib (pp. 328, 324 F, G).

Lintel.—The horizontal timber or stone, sometimes known as the architrave, that spans an opening, and supports a weight (pp. 27, 33, 38 H, J, 81, 88, 104, 268 J).

Loggia.—A gallery behind an open arcade or colonnade, forming a shelter (pp. 506, 570 B, F, 579 F, 602 H, 705 B, 752 J, 770 A).

Machicolation (Fr. *mache* = melted matter + *coulis* = flowing).—A projecting parapet with floor openings, through which molten lead, pitch, stones, etc., were dropped on an enemy below (pp. 366, 367 H, 452 B, C, 509 H).

Mandorla (It., almond) (*see* Aureole).

Masons' Mitre.—The treatment in masonry and sometimes in joinery for mouldings meeting at right angles, when the diagonal mitre thus formed does not coincide with the joint, but is worked on the face of the one piece which is carried straight through and simply butts on the other (pp. 115 D, E, 217 R).

Metope (Gk. *meta* = between + *ope* = an opening).—The space between Doric triglyphs, sometimes left open in ancient examples; afterwards applied to the carved slab (pp. 79, 85 A, C, M, 88, 92, 125 K, M).

Mezzanine.—A low storey between two lofty ones (Fr. *entresol*) (p. 644 K).

Misericord (Lat. *misericordia* = pity).—A hinged seat, made to turn up to afford support to a standing person, and with underside frequently grotesquely carved (pp. 424, 495 H, 340, 425).

Mitre.—The term applied, especially in joinery, to the diagonal joint formed by the meeting of two mouldings at right angles (pp. 428 E, F, 762 K).

Modillions (*see* Bracket).

Module (Lat. *modulus* = measure).—A measure of proportion, by which the parts of a Classic Order or building are regulated, being usually the semi-diameter of a column immediately above its base, which is divided into thirty parts or minutes (pp. 80, 116, 756, 757).

Mosaic.—Decorative surfaces formed by small cubes of stone, glass, and marble; much used in Roman and later times for floors and wall decoration (pp. 137, 214, 194, 205, 211, 217, 226, 232, 268 K).

Mouldings (Lat. *modulari* = to be measured).—The contours given to projecting members (pp. 122, 119, 120, 414, 415).

Mullions.—Vertical members dividing windows into different numbers of lights (pp. 375 A, 376 B, 408).

Mutules.—Projecting inclined blocks in the Doric cornices, supposed to be derived from the ends of wooden rafters (pp. 79, 85 M, 78, 191).

Naos (Gk., dwelling).—The principal chamber in a Greek temple, containing the statue of the deity (pp. 74, 76, 86, 87 G).

Narthex.—A long arcaded porch forming an entrance into a Christian basilican church, originally appropriated to penitents (pp. 198 K, 206 C, E, 210 J, 224, 234 B, F).

Naumachia (Gk., a battle of ships).—A lake for the exhibition of sea fights, encircled by seats for spectators; sometimes refers to the spectacle itself.

Nave (Gk. *naos* = dwelling, or more probably Lat. *navis* = ship).—The ship was the symbol of the Church, in which the faithful are borne safely over the sea of life to the haven of eternity. The term is applied to the western limb of a church, as opposed to the choir; also to the central aisle of the basilican, Mediæval, or Renaissance church, as opposed to the side

aisles (pp. 198 K, 206 C, E, 301 C, 353 D, 459 A, B, 718 D).

Necking.—The space between the astragal of the shaft and the commencement of the capital proper in the Roman Doric (pp. 567 C, 757 C).

Newel.—(1) The central shaft, round which wind the steps of a circular staircase; (2) also applied to the post into which the handrail is framed (pp. 618 A, 671 H, 693, 741 A, 755 B, C, E, 762 J, L).

Niche (It. *nicchio* = shell).—A recess in a wall hollowed like a shell for the reception of a statue or ornament (pp. 148, 151, 152 H, 342, 611 F).

Nimbus (Lat., bright cloud).—A circular halo (*see* Aureole).

Norman.—The style, also termed English Romanesque, of the eleventh and twelfth centuries (pp. 320, 323 A, 336, 402 A, B, C, D).

Nymphæum (literally a sanctuary of the nymphs).—A building in Classic architecture for plants, flowers, and running water, ornamented with statues and forming a cool and agreeable retreat (pp. 149, 231 A).

Octastyle.—A portico with a range of eight columns (pp. 76 H, M, 87 B, 310 C).

Odeion (Lat., music-room).—A building, resembling a Greek theatre, designed for musical contests (p. 75 C).

Ogee.—A moulding made up of a convex and concave curve. Also applied to an arch of similar shape (pp. 119 H, 859).

Ogivale (Fr., pointed).—A term given to Gothic architecture in France (p. 440).

Opisthodomos (Gk., a back room).—In Greek temples, the room serving as a treasury. It is usually the posticum, as in the Parthenon (p. 87 G), but sometimes was between the naos and the posticum, as at Ephesus (p. 103 B).

Opus incertum,— quadratum,— reticulatum, — testaceum, etc. (*see* p. 134).

Order.—An Order in architecture signifies a column, with base (usually), shaft, and capital, together with the entablature which it supports (pp. 116, 757). Also applied to each ring of voussoirs in a Mediæval arch (p. 414).

Oriel.—A window corbelled out from the face of a wall by means of projecting stones (pp. 371 D, 377 F, 393 D).

Ovolo.—A convex moulding much used in Classic and Renaissance architecture, often carved with the egg and dart or egg and tongue (pp. 119 F, 120 L, Q, 606 G).

Palæstra (Gk. *palaistra* = wrestling school).—A public building for the training of athletes (pp. xxxvi B, 118).

Palmette (*see* Anthemion).

Panel.—A compartment, sunk or raised, in walls, ceilings, doors, wainscoting, etc. (pp. 115 A, 193 F, 378 J, 428, 741, 761 D, 762 K) (*see also* Coffer).

Parapet (Lat. *parare* = to guard + *pectus* = breast).—The portion of wall above the roof-gutter, sometimes battlemented; also applied to the same feature, rising breast-high, in balconies, platforms, and bridges (pp. 188, 273, 370 A, 416, 452 B, C, 543, 562 A, B, 770 A).

Parclose Screen (Old Fr. *parclose* = an enclosure).—A screen enclosing a chapel, as a shelter from draughts, or to prevent distraction to worshippers; also applied to the screen around a tomb or shrine (p. 423 A).

Pateræ.—Flat circular ornaments which resemble the Classical saucers used for wine in sacrificial libations (pp. 115 D, E, 125 D, G, J).

Pavimentum (Lat. *pavire* = to ram down).—A pavement formed by pieces of tile, marble, stone, flints, or other material set in cement and consolidated by beating down with a rammer (p. 194 H, K, L, M).

Pediment (Lat. *pedare* = to support).—In Classic architecture, a triangular piece of wall above the entablature, which fills in and supports the sloping roof; hence applied to any similar ornamental feature (pp. 79 A, 81 A, 103 A). In Renaissance architecture used also for any roof end, whether triangular, broken, or semicircular (pp. 723, 736 B, 770 A). In Gothic, such features are known as gables.

Pendentive.—The term applied to the triangular curved overhanging surface by means of which a circular dome is supported over a square or polygonal compartment (pp. 61 H, 135 N, 224 C, 225 B, 231, 232 B, 544, 721 A, B, 731).

Peribolus (Gk. *peribole* = an enclosing).—The enclosing wall or colonnade surrounding a temenos or sacred enclosure, and hence sometimes applied to the enclosure itself (pp. 103 A, 144 A, C, 148 B).

Peripteral.—A term applied to an edifice surrounded by a range of columns (p. 76 E, F, H, K, M, N).

Peristyle.—A range of columns surrounding a court or temple (pp. 81, 92, 103, 144, 152, 543 B, 569 B, 585).

Perpendicular.—A phase of English Gothic evolved from the Decorated style, and prevalent during the fifteenth and sixteenth centuries (pp. 325, 323 B, 403 L, M).

Pier (Lat. *petra* = rock).—A mass of masonry, as distinct from a column, from which an arch springs, in an arcade or bridge; also applied to the wall between doors and windows (pp. 165 A, 171 A, 187, 188, 286 K, 721 A, 751 B). The term is

sometimes given to a pillar in Gothic architecture (pp. 357, 410).

Pilaster.—A rectangular feature in the shape of a pillar, but projecting only about one-sixth of its breadth from a wall, and the same design as the Order with which it is used (*see* Anta) (pp. 116 F, 154, 562 A, 624, 751, 770 A).

Pinacotheca (Gk., picture gallery).—A building to contain painted pictures (p. 110 H).

Pinnacle.—In Gothic architecture, a small turret-like termination on the top of buttresses, parapets, or elsewhere, often ornamented with bunches of foliage called crockets (pp. 301, 342, 346 A, 358 A, 416 E, 564, 656, 770 B).

Piscina (Lat., a reservoir of water).—A stone basin in a niche near the altar, to receive the water in which the priest washes the chalice (p. 422 E, F, G, H). A term also applied to the tank or fountain in Roman baths (pp. 158 A, 161 B).

Pitch of Roof.—The inclination or angle of its surface to the horizon.

Plan.—The representation of the shape of a building showing the general distribution of its parts on the ground (pp. 24 G, 48 H, 76, 158 B, 183 D, 224 G, 459, 589 G, 623 E, 711).

Plinth.—The lowest square member of the base of a column ; also applied to the projecting stepped or moulded base of any building (pp. 93 E, F, 153 E, 310 D, 322 A, 699).

Plough-share Twist.—The irregular or winding surface in a vault, resembling a plough-share, where the wall ribs, owing to the position of the clear-story windows, start at a higher level than the other ribs (p. 303 C).

Podium.—A continuous pedestal ; also the enclosing platform of the arena of an amphitheatre (pp. 140 A, 143, 144, 166 B, 636 C, 770 A).

Poppy-head (Lat. *puppis* = poop or raised stern of a ship).—The ornamental termination to a bench-end, frequently carved with fleur-de-lis, animals, or figures (p. 424 B, C, G).

Portico.—A colonnaded space forming an entrance or vestibule, with a roof supported on at least one side by columns (pp. 92, 154 A, 636 C, 654 A, 712 G, 723, 770 A).

Posticum or Epinaos (p. 86 H).—In a Greek or Roman temple, the open vestibule within the portico at the rear of the naos, usually corresponding to the principal end ; it often served as the opisthodomos (p. 87 G).

Presbytery (Lat. *presbyter* = elder).—The space at the eastern end of a church for the clergy, but often applied to the whole sanctuary (pp. 332–335, 353, 459).

Priory.—A monastic establishment presided over by a prior, who was often subordinate to an abbot (p. 339).

Pronaos.—The part of a temple in front of the naos, often synonymous with portico (pp. 76, 87 G).

Propylæum (Gk., a front portal).—An important entrance gateway or vestibule, in front of a sacred enclosure as at Athens, Priene, Sunium, and Eleusis (pp. iv, 75, 110).

Prostyle (Gk., a column in front).—An open portico, with columns standing in front of a building (pp. 76 C, D, 104 A).

Pseudo-dipteral (Gk., false double-winged).—A temple which is planned as a dipteral building, i.e. two columns in depth, but from which the inner range is omitted (p. 76 L).

Pteroma (Gk., a wing).—The space between the lateral walls of the naos of a temple and the peristyle columns.

Pulvinated (Lat., a cushion).—A term applied to a frieze whose face is convex in profile (pp. 115 C, 152 C, H, J, 603 A, B).

Purlin.—A horizontal beam in a roof resting on the principal rafters and supporting the common rafters and roof covering (p. 409 D, E, F).

Pycnostyle (Gk., close columned).—A term given when the space between two columns is 1½ diameters (p. 80 A).

Pylon (Gk., a gateway).—A term applied to the mass of masonry with central opening, forming a monumental entrance to Egyptian temples (pp. 28, 31 A).

Quadriga.—A four-horsed chariot often surmounting a monument (pp. 113, 177 G, 178 F, 181 F, 604 C).

Quatrefoil (Fr. *quatre feuilles* = four leaves).—In tracery, a panel divided by cusps into four leaf-shaped openings (pp. 408 D, 416 D, F).

Quirk.—A sharp V-shaped incision in a moulding, such as that flanking the Norman bowtell (pp. 407 B, 414 B, E).

Quoin (Fr. *coin* = angle).—A term generally applied to the corner-stones at the angles of buildings and hence to the angle itself (pp. 568 B, 738 A, 736).

Refectory.—The dining-hall in a monastery, convent, or college (pp. 248, 339, 353 D, 359).

Regula (Lat., a rule).—The short band, under the triglyphs, beneath the tenia of the Doric entablature, and to which the guttæ are attached (pp. 79 A, 80, 85 M, 88).

Reliquary.—A light portable receptacle for sacred relics (pp. 519 B, 606 H).

Renaissance (Fr., a new birth).—The term applied to the reintroduction of

Illustrations are paged consecutively with the text.

Classic architecture all over Europe, in the fifteenth and sixteenth centuries (p. 540).

Reredos.—The screen, or ornamental work, rising behind the altar. The reredoses in Manchester, S. Albans, and Durham Cathedrals are carved structures reaching nearly to the roof (pp. 352 G, 354 D, 480 C, 520 H, K, 524 D, 530 A, 606 E, 721 A).

Respond.—A half-pillar at end of an arcade.

Reveal.—The surface at right angles to the face of a wall, at the side of an opening cut through it; known as a "splay" when cut diagonally. Especially applied to the part outside the window-frame.

Rib.—A projecting band on a ceiling, vault, or elsewhere (pp. 302, 303 C, 324, 378 C, 414 E, L, U, Y, 590 A, 693, 694, 723, 748 A, 761 A, B).

Ridge.—The apex of a sloping roof, running from end to end (pp. 86 A, 97 H, 206 A, 322 A, 346 A, 359 A, 438 C, 441 A).

Rococo (Fr. *rocaille* = rock-work).—A term applied to a type of Renaissance ornament in which rock-like forms, fantastic scrolls, and crimped shells are worked up together in a profusion and confusion of detail often without organic coherence, but presenting a lavish display of decoration (pp. 545, 628, 644).

Roll Moulding.—A plain round moulding (pp. 33 B, 41 J). In Mediæval architecture, sometimes known as the Bowtell (pp. 863, 414 B, C, D).

Romanesque.—The name given to the style of architecture, because founded on Roman architecture, and prevalent in Western Europe from the ninth to the twelfth century (p. 243).

Rood Loft (A.-Sax., rod, hence cross or crucifix).—A raised gallery over the rood screen (p. 423 C, D), a name given to the chancel screen (p. 423) when it supports the "rood" or large cross erected in many churches in Mediæval times (p. 423 L). It was reached by stairs in the chancel wall (p. 423 F, G), and appears to have been also used as a gallery for minstrels and singers on festival days.

Rose Window (*see* Wheel Window).

Rostrum (Lat., the prow of a ship).—The plural "rostra" denoted the raised tribune in the Forum Romanum, from which orators addressed the people, and was so called because decorated with the prows of ships taken in war (pp. 139, 140), as were rostral columns (p. 175).

Rustication.—A method of forming stonework with roughened surfaces and recessed joints, principally employed in Renaissance buildings (pp. 558, 561, 712 A, 756 A).

Scotia (Gk. *scotia* = darkness).—The concave moulding between the two torus mouldings in the base of a column, throwing a deep shadow (pp. 119 E, 120 H, T).

Screen.—A partition or enclosure of wood, often elaborately carved; when separating choir from nave, it is termed the choir screen. The Latin cancellus (screen), corrupted to "chancel," primarily used for the enclosing object, was afterwards applied to the space which it enclosed (pp. 232 B, 336 B, 382 H, 383 C, 423, 479 G, 480 E, 492 B, 686 B).

Scroll Moulding.—A kind of moulding, so called from its resemblance to a scroll of paper, the end of which projects over the other part (p. 414 M).

Section (Lat. *sectus* = cut).—A term used to express the representation of a building cut by a vertical plane, so as to show the construction. The term is also applied in the same way to any solid (pp. 18 A, B, H, P, S, 23 B, E, F, 86 E, F, 153 A, 224 D, E, 347 E, 718 C).

Sedilia (Lat., seat).—The seats for the priests, generally of masonry, formed in the wall on the south side of the chancel (p. 422 K, M, N, P).

Severy.—A compartment or bay of a vault (pp. 301 C, F, 302 F, H).

Shaft.—The portion of a column between base and capital (pp. 79 A, 116, 757); also applied in Mediæval architecture to a small column, as in a clustered pier, supporting a vaulting rib (pp. 322 B, 410).

Shrine.—A sacred place or object, e.g. a receptacle for relics (p. 480 D).

Soffit.—The ceiling or underside of any architectural member (pp. 85 M, 105 G, 135 J, 144 D, 147 B, C, 181 A, E, 358 C, D, 578 A, 617 B, G, 761 A, B).

Solar (Lat. *solarium* = a sunny place or balcony).—A Mediæval term for an upper chamber, usually the private room of the owner (pp. 365 E, 369 E, F, 367).

Span.—The distance between the supports of an arch, roof, or beam.

Spandrel.—The triangular space enclosed by the curve of an arch, a vertical line from its springing, and a horizontal line through its apex (pp. 178 B, D, E, F, 217 E, 286 M, 347 D, 407 M).

Spire (A.-Sax. *spir* = a stalk).—The tapering termination of a tower in Gothic or Renaissance architecture, which was the result of elongating an ordinary pyramidal or conical roof (pp. 345 B, 351 B, 360, 401, 442 A, 450 A, 451 B, 472 D, 486 B, 489 A, C, 523 E, 732).

Splay (short form of "display," cf. "reveal").—The diagonal surface formed by the cutting away of a wall, as when an opening is wider inside than out or conversely.

Squinch Arches.—Arches placed diagonally at the internal angles of towers to bring them from the square to support the octagonal spire (pp. 360 E, 524 D, 530 A).

Stalls.—Divisions with fixed seats for the clergy and choir, often elaborately carved, with projecting elbows, "misericords," and overhanging canopies. The bishop's seat is called the "throne" (pp. 346 B, 348 B, 383 C, 424 D, F, G, 495 H, 538 C, 761 M).

Starling.—The pointed mass of masonry projecting from the pier of a bridge, for breaking the force of the water, hence known also as a "cutwater" (p. 395).

Steeple.—The term applied to a tower crowned by a spire (pp. 360, 731 B, C, 732).

Stilted Arch.—An arch having its springing line higher than the line of impost mouldings, to which it is connected by vertical pieces of walling or stilts (pp. 323 A, 353 B, 859).

Stoa.—In Greek architecture, a portico or detached colonnade, corresponding with the Latin "porticus" and the Italian "portico" (pp. 75 C, 97 K).

Storey.—The space between two floors.

String Course.—A moulding or projecting course running horizontally along the face of a building (pp. 154 A, 321 C, E, L, M, P, 558 B, 561 B, 700 A, C, 706 C, 731 C).

Stylobate.—In Classic architecture, a continuous base or substructure on which a colonnade is placed (pp. 79 A, 81 A, 88, 104 A).

Systyle.—A term used when the space between two columns is 2 diameters (p. 80 A).

Tabernacle.—A recess or receptacle—usually above an altar—to contain the eucharistic Host (p. 480 A). Also applied to a niche or arched canopy (p. 422 J, L). "Tabernacle work" is the name given to elaborately carved niche and canopy work (pp. 424 D, E, F, 480).

Temenos.—A sacred precinct in which stood a temple or other sanctuary (pp. 97 G, K, 103 A).

Tenia.—The band or fillet forming the upper member of the Doric architrave (pp. 79 A, 88).

Terra-cotta.—Earth baked or burnt in moulds for use in building construction and decoration, harder in quality than brick.

Tessera.—A small cube of stone, glass, or marble, used in making mosaics.

Tetrastyle.—A portico of four columns (pp. 76 C, D, 97 A, C, D, 104 A, 310 A).

Tholos.—The dome (cupola) of a circular building, hence applied to the building itself (pp. 70 A, B, E, 76 E).

Torus (Lat., a swelling).—A large convex moulding, used principally in the bases of columns (pp. 106 M, 119 L, 120 H, S) (*see* Astragal).

Trabeated (Lat. *trabs* = a beam).—A style of architecture such as the Greek, in which the beam forms the constructive feature (pp. 23, 24, 27, 31 B, 33 B, 79, 81, 88, 92, 103 A, 104).

Tracery.—The ornamental pattern-work in stone, filling the upper part of a Gothic window; it may be either "plate" or "bar" tracery. "Plate" tracery appears to have been cut out of a plate of stone, with special reference to the shape of the lights, whereas "bar" tracery was designed principally for the pleasing forms produced by combinations of geometrical figures. It is also applied to work of the same character in wood panelling (pp. 408, 423, 428 H, 461, 501 B, 502, 505 A, B, 515 C).

Trachelion.—The neck of a Greek Doric column, between the annulets and the grooves or hypotrachelion (p. 80).

Transept.—The part of a cruciform church, projecting at right angles to the main building (pp. 360 C, 459 A, B, 718 D).

Transoms.—The horizontal divisions or cross-bars of windows (pp. 408 D, M, 643 H, 699).

Trefoil (Fr. *trois feuilles* = three leaves).—A term applied to this distribution in Gothic tracery (pp. 408 D, E, H, 422 F, G, L, M, 859).

Triforium (Lat. *tres* = three + *fores* = openings).—The space between the sloping roof over the aisle and the aisle vaulting. The term was first applied to the Norman arcades at Canterbury which had triple openings towards the nave, and was afterwards used for any passages and galleries in this position. It occurs in large churches only, and, from having no windows to the open air, is often called a "blind-storey" (pp. 301 C, F, 341 E, 353 B, 402, 403).

Triglyphs (Gk., three channels).—Blocks with vertical channels which form a distinguishing feature in the frieze of the Doric entablature (pp. 79 A, E, 85 M, 116 A, B, 757 A, C).

Turrets.—Small towers, often containing stairs, and forming special features in Mediæval buildings (pp. 364 D, 366 H, 377 A, 378 B, 383 A).

Tympanum.—The triangular surface bounded by the sloping and horizontal cornices of a pediment (pp. 79 A, 81 A, 154 A, 712 G); also the space enclosed between the lintel and the arch of a Mediæval doorway (pp. 286 B, 466 D).

Vault.—An arched covering in stone or brick over any building (pp. 48 J, 61 M, 135, 148 G, 157 F, 161 A, H, 302, 303, 324).

Vesica Piscis (Lat., bladder of a fish).—A pointed oval form, so called from its shape (p. 286 B).

Vestibule.—An ante-room to a larger apartment of a building (pp. 158 B, 161 F, 562 C, 570 C, H, 724 B).

Volute (Lat. *voluta* = scroll).—The scroll or spiral occurring in Ionic, Corinthian, and Composite capitals (pp. 93, 94, 120 D, 124 A, 147 D, 178 G, 181 G, 193 D).

Voussoirs. — The truncated wedge-shaped blocks forming an arch (pp. 303 A, B, D, 859).

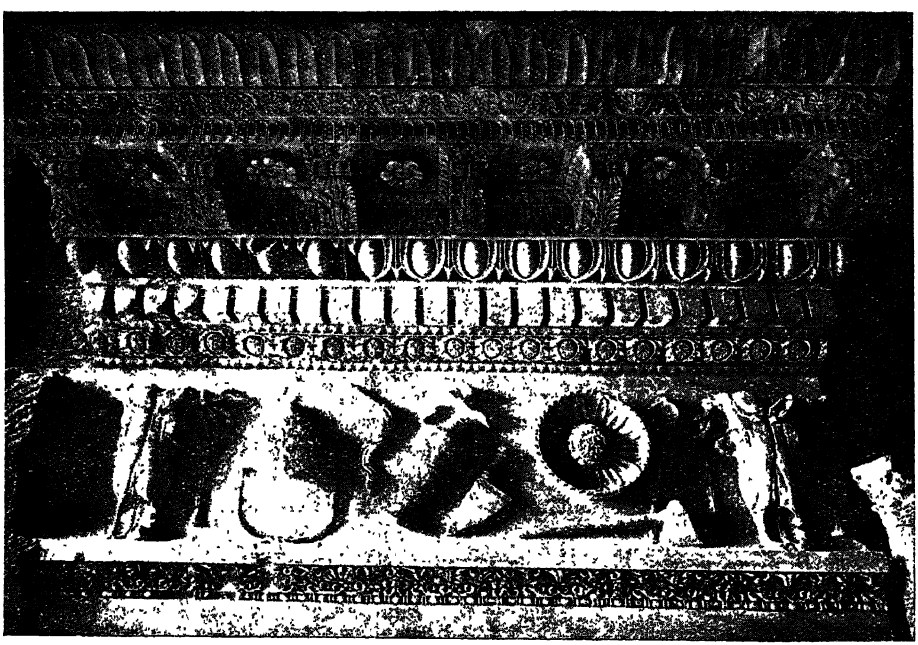
Wave Moulding.—A typical moulding of the Decorated period consisting of a slight convexity flanked by hollows (p. 414 P, R, S).

Weathering.—The slope given to offsets to buttresses and the upper surface of cornices and mouldings, to throw off rain (pp. 153 A, 322 A, 404, 602 C).

Wheel Window.—A circular window, whose mullions converge like the spokes of a wheel (pp. 265, 341 A, C, 438 A, 446, 461 E, H, 505 A).

Zoophorus.—A frieze in which reliefs of animals are introduced, as in the portico of the Theseion and the Panathenaic frieze on the naos wall of the Parthenon (pp. 85 N, 125 H).

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